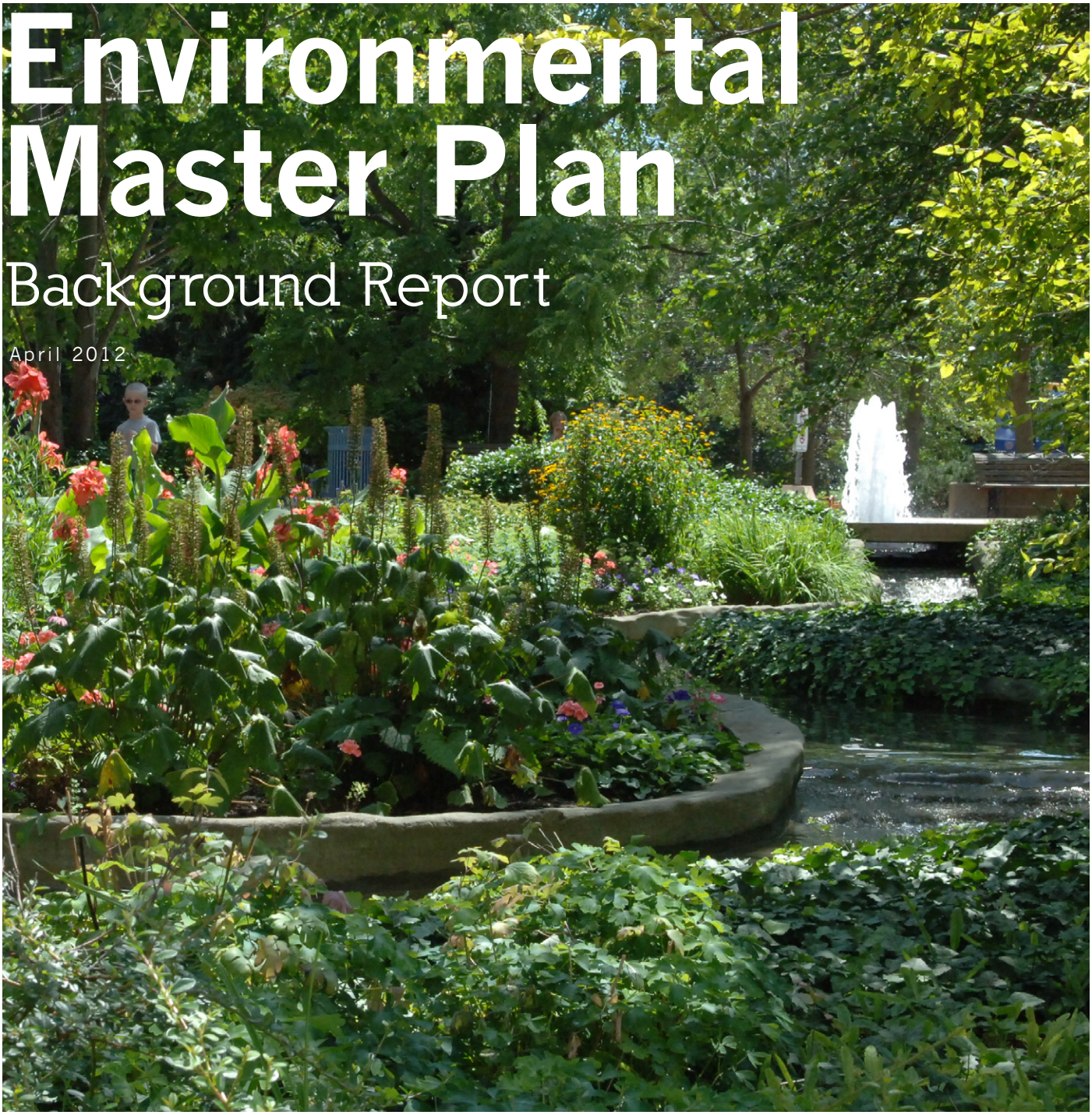
Brampton Grow Green

Environmental Master Plan

Background Report

April 2012



URBAN STRATEGIES INC

Halsall

Brampton Grow Green

BRAMPTON Flower City

The Background Report provides a snapshot of Brampton today and contains a review of the current environmentally-related efforts, City policies, programs and initiatives currently underway. It includes a review of best practices, a draft vision, guiding principles and goals and proposes initial directions for moving forward.

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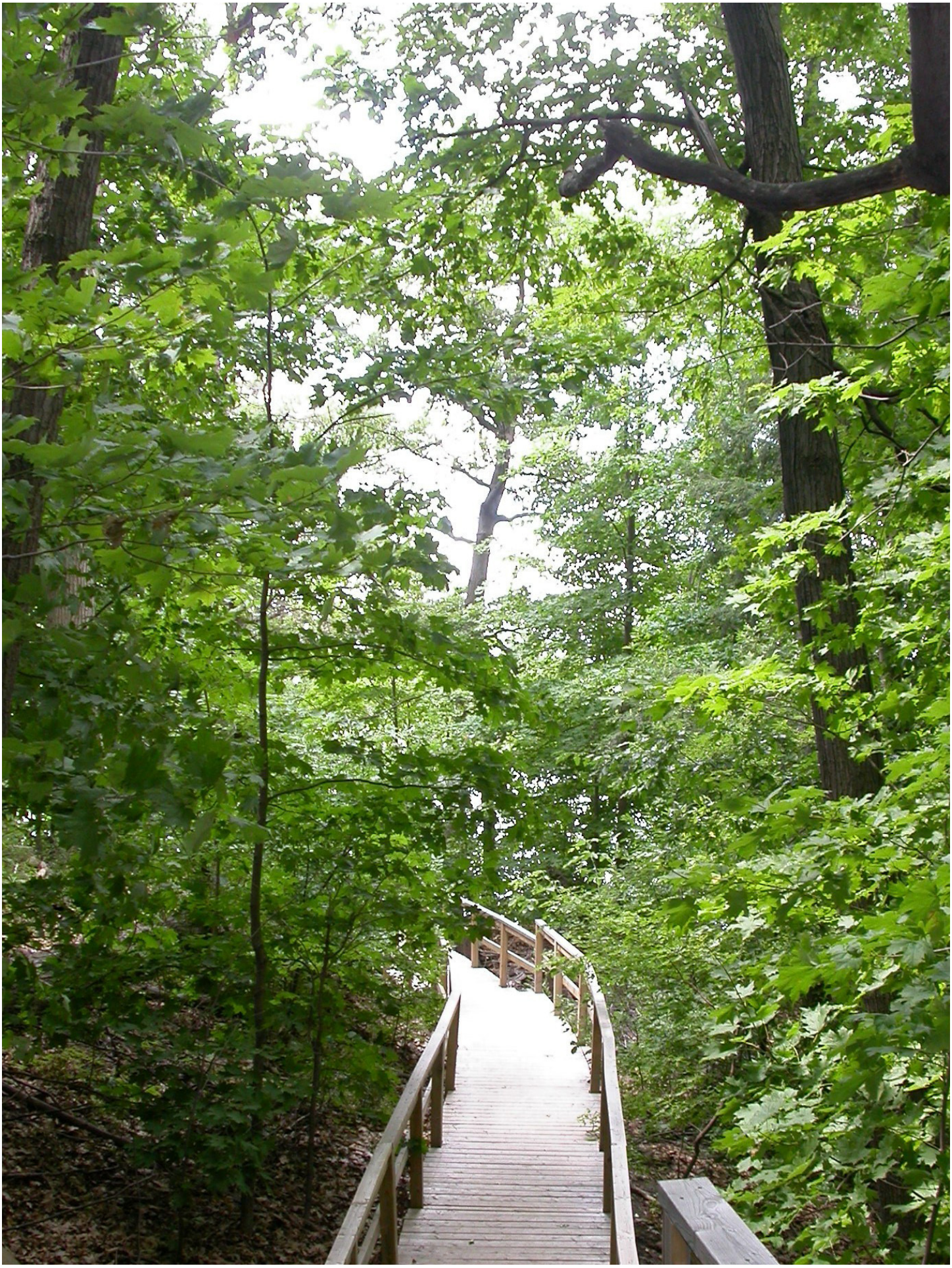


Chapter 1

Introduction

Report Structure

This Background Report summarizes the first phases of the Brampton Grow Green Environmental Master Plan project.

The report presents a snapshot of environmental initiatives that are currently underway in Brampton. The snapshot of initiatives, while continually evolving, helps to identify both Brampton's environmental strengths and areas where the Master Plan should focus recommendations to improve performance.

Specifically, the Report:

- explains the objective the Environmental Master Plan (Chapter 1)
- describes the project methodology (Chapter 2)
- distills lessons learned from best practices related to environmental master planning (Chapter 3)
- highlights key findings that establish Brampton as a distinct community (Chapter 4)
- identifies successes, areas of strength and opportunities to enhance Brampton's environmental performance (Chapter 5)
- provides a draft vision, guiding principles and goals for the EMP (Chapter 6)
- identifies six core components that will be the focus for targets, policy direction, strategies and actions (Chapter 7), and
- outlines the next steps (Chapter 8)

What is Brampton Grow Green?

Integrated Community Sustainability Plan
The City will soon be renewing its Strategic Plan, which will serve as a blueprint to guide Brampton's evolution, growth and development over the next decade. Brampton prides itself on being the Flower City of Canada - a city that works beautifully. The Grow Green Environmental Master Plan will assist the strategic plan in developing sustainable solutions that meet the needs of its diverse residents and striving to provide a high quality of life for all.

More than 100 years ago, Brampton was known as the Flowertown of Canada; its roses were renowned for their quality and excellence the world over. Today, as Brampton grows into a cosmopolitan and diverse city, that commitment to quality and excellence remains unchanged.

The Grow Green Environmental Master Plan will build on our Flowertown traditions and strive for excellence in environmentally sustainability. The programs we have and decisions we make help distinguish Brampton as the Flower City, a great place to live, work and play.

The Environmental Master Plan in combination with the City of Brampton Strategic Plan, Official Plan 2006 and Growth Management Program, shall outline Brampton's long-term sustainable community objectives that will protect and conserve our natural environment including the water, aquatic and terrestrial resources, enhance our cultural heritage as a Flower City, support our diverse cultural and social values, contribute to the economy and enhance our quality of life. These strategic documents will translate into environmentally sustainable, achievable, educational and affordable services, programs and actions for all City departments, as well as ecosystem based land use planning and development.

Building on Success
The City of Brampton is currently implementing numerous initiatives that are enhancing the City's environmental sustainability. From community programs and transit improvements, to resource and infrastructure management, Brampton has approximately 175 initiatives that protect, restore and improve the environmental performance of the City's communities, natural systems and open spaces, air, water and energy resources, transportation networks, buildings and facilities. The City is continuing this tradition with the preparation of Brampton Grow Green, an Environmental Master Plan (EMP).

Sustainable Directions
The purpose of Brampton Grow Green is to understand, from an environmental performance perspective, what the City does well, to identify gaps and opportunities for changes to its operations and service delivery and to establish policies and standards that will conserve and improve upon the environmental qualities of the City's built and natural landscapes. Through an evaluation of current methods and national best practices Brampton Grow Green will identify the ways and means to improve the environmental performance of the City's underlying human and environmental systems in such areas as:

- municipal operations, programs and services
- land use planning
- built form

- the natural heritage system
- urban green space
- employment and industry
- transportation and movement systems
- energy and waste
- water usage
- education and outreach

These recommendations will provide a 'green lens' on the City's strategic and decision-making processes to direct planning policy, corporate management, infrastructure and programming decisions, and capital expenditures. The goal of the EMP will be to provide a sustainable environmental framework for Brampton, as both a corporation and as a planning authority. Brampton Grow Green will be linked to the City's economic, social and cultural goals of sustainability, as identified in the City's Strategic Plan. Policies and benchmarks targeting economic, social and cultural elements are being addressed through other City processes.

A Focus on Action

Ultimately, Brampton Grow Green will establish an integrated and defined approach to environmental sustainability, translating environmental objectives into attainable and measurable tasks and benchmarks. It will set goals for high environmental performance for City services and concrete targets for monitoring progress. The City's fundamental aspiration is to provide long-term sustainable solutions that will address the environmental vision of Brampton and its residents, and inspire future commitments, partnerships and investments. Brampton Grow Green will be prepared by engaging multiple stakeholders, bringing together Municipal staff, stakeholders and the public at-large. It will facilitate sustainable decision-making across all municipal departments and will build awareness and encourage participation amongst the broader community.

A New Perspective

City Council directed staff to prepare an EMP to provide clear City-wide environmental directions and priorities and to unlock additional resources such as the federal Gas Tax funding. This federal Fund provides long-term money for public transit, green energy, solid waste management and other infrastructure investments that contribute to cleaner air and water and reduce greenhouse gas emissions. A municipality must complete an Integrated Community Sustainability Plan (ICSP) as part of the requirements to receive ongoing provincial and federal funding commitments. The EMP, in concert with Brampton's Strategic Plan, Official Plan and Growth Management Program, will provide the City's ICSP.

The EMP is intended to bring corporate cohesion to the City's many ongoing environmental initiatives, policies and programs from across all City departments, operations and services. It is not intended to duplicate the work and value of the other strategic documents, studies and programs. It will add a sustainability layer to the City's growth and decision-making, complementing and supplementing other municipal initiatives by identifying actions not addressed by those plans and programs. It is anticipated that the goals, objectives and actions of the EMP will be translated into responsible, achievable and educational environmental programs for each City department and to influence the City's land use development and growth management program. The EMP will identify any strategic policy directions and updates that are necessary for Brampton's Strategic Plan and Official Plan to have regard for other provincial policies and plans.

Why Grow Green?

Global Imperative

In 1987 the Brundtland Commission, convened by the United Nations to address growing environmental concerns, defined the term sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." Their efforts raised awareness and discourse on the negative impacts of human activity on the environment. Today, over two decades later, the environment is at the forefront of policy, and national and municipal governments strive to balance settlement patterns and land use with conservation. Escalating costs to extract scarce and less accessible resources has prompted a significant increase in the reuse and recycling of materials and a greater reliance on renewable sources of energy. Even more compelling has been the focus on climate change: the measurable change in the distribution of weather over time. Not only does human activity deplete resources, which forces expensive solutions, it produces greenhouse gases, which contribute to climate change.

Communities across Canada, and indeed globally, are faced with an undeniable environmental imperative. City building and transportation practices of the last half century, particularly in North America, are not sustainable and contribute to climate change. Sprawling single-family home neighbourhoods, wide roads to support single-occupant vehicles, and large distances separating residential and employment areas consume extensive amounts of land and resources.

Planning and designing our cities in this manner pollutes our land, water and air, affecting weather, food production capabilities, natural habitats, water accessibility and

condition, air quality and, ultimately, our health and quality of life. Sprawl and car dependence have been linked to significant negative health trends, and harmful vehicle and industrial emissions to increasing rates of respiratory ailments.

There is a realization that cities must now operate and grow differently. In the coming decades, cities will strive to function as balanced ecosystems, with built landscapes developed harmoniously with natural heritage systems, and municipal operations focused on protecting and maintaining environmental resources. A city's reputation will be significantly linked to its environmental performance. Carbon neutral operations, zero waste and environmental net gains will be fundamental to a city's bottom line and its ability to be a livable community, and to attract and retain traditional and 'green' businesses. The increasing costs of combating pollution, managing waste and obtaining depleting energy and mineral resources will shift perspectives from,

"we cannot afford to implement sustainable solutions" to "we cannot afford not to be sustainable".

From an economic perspective, long term sustainable solutions to infrastructure and facilities are being understood as fiscally responsible and advancing green initiatives as a key component and a competitive advantage in the new economy. From a cultural and social perspective, long-term sustainable behavioural solutions will require environmental education and engagement of municipal leaders and staff, local residents, businesses and stakeholders.

National Imperative

In January 2010, Yale University released an update to its Environmental Performance Index (EPI), a ranking of 163 countries on 25 performance indicators. A country's total EPI score is comprised of two overriding objectives: Environmental Health and Ecosystem Vitality, each of which contributes to 50% of its total score. 20 indicators contribute to Ecosystem Vitality and 5 indicators to Environmental Health, meaning that, on average, Environmental Health indicators are weighted more heavily. These indicators provide a gauge at a national government scale of how close countries are to achieving established environmental policy targets. Across all indicators, Canada ranked 46th, well behind the majority of the world's most developed nations.

Generally, Canada performed well under indicators categorized as Environmental Health, such as access to drinking water, access to sanitation and the effects of air pollution on humans (ranked 1st, along with between 30 and 60 other countries, depending on the indicator). However, Canada performed poorly under several Ecosystem Vitality indicators, which impacted its score and lowered its ranking. The following indicators are of particular concern:

- Greenhouse Gas Emissions per Capita (151st – the second most heavily weighted indicator, contributing to 12.5% of the total EPI score)
- Nitrous Oxide Emissions (147th)
- Sulphur Dioxide Emissions (146th)
- Non-Methane Volatile Organic Compound Emissions (157th)

Industrial processes, use of transportation fuels and energy consumption by buildings are significant contributors to greenhouse gas emissions and these underlie Canada's relatively poor performance in this

international comparison. Stricter regulations in these areas would lead to reduced emissions and ultimately, reduced concentrations of greenhouse gases. While some regulations, such as vehicle emissions, is a provincial responsibility, building energy consumption can be influenced by City policy, through a Leadership in Energy and Environmental Design (LEED) or green building directive. Similarly, the way we plan our communities and their infrastructure systems is within the control of local government.

Regional Imperative

Municipalities are responsible to prepare and update documents and programs to address current senior government initiatives to ensure comprehensive, integrated, long-term planning and management that will ensure a healthy environment. Current federal and provincial legislation and regulations define standards and criteria to protect our natural heritage system, and conserve the quality of our air, water and soil resources and to manage our renewable and non-renewable resources. Current provincial, regional and conservation authority plans and policies, form the framework that will guide how the City of Brampton will conserve landforms and ecosystems of provincial and regional significance while managing growth to create complete healthy liveable communities. In addition, municipalities need to understand the plans and policies of the adjacent area municipalities given the physical connections of their air, water and land resources.

The Region of Peel has a role, in combination with senior government, the area municipalities and the Conservation Authorities to deliver environmental programs to Peel residents, stakeholders and businesses. Peel's approved Strategic Plan charts the long-term vision for the communities in Peel, and the Region's role in achieving that vision. The Plan is updated at the beginning of each term of Regional Council and guides the work of Council and staff. The Strategic Plan contains a vision for the community, a mission for achieving the vision, and goals that respond to Peel's changing and diverse needs. The Plan's goals have been aligned to seven key themes that encompass the programs and services delivered to the Peel community, including Environment, Social Development, Community Health, Transportation, Cultural Development, Public Safety and Service Excellence. The Strategic Plan provides a foundation for establishing Term of Council Priorities, the annual Budget as well as program and operational plans. It keeps the organization focused on delivering the right services in the right way to the Peel community.

Local Imperative

Based on the 2006 census, the City of Brampton is the second fastest growing community in Canada, the third largest City in the Greater Toronto Area and the eleventh largest City in the country. Its current population of over 450,000 is expected to grow to approximately 740,000 by 2031 and the number of jobs in the City is forecast to increase by almost 200,000, from 175,000 to 320,000. Brampton is recognized as an Urban Growth Centre by the Province's Growth Plan and as a Mobility Hub by Metrolinx. It is no longer a bedroom community and it must think and act in accordance with anticipated growth and its regional significance.

While this growth is envied by some, augmenting revenues and creating an increasingly vibrant city, the scale of this growth dictates that it must be managed sustainably. Climate change in general, and the desire to complete an Integrated Community Sustainability Plan (ICSP), in particular, is motivating a new direction for planning with the undertaking of Brampton Grow Green. But, it will be the impacts of Brampton's extraordinary growth that will mandate innovative action. The magnitude of Brampton's anticipated growth means that the City is not like the vast majority of municipalities in Canada. The potential

consequences of this growth to the environment, if managed poorly, will put great stress on the City's natural heritage systems including its air and water quality, resource needs and energy requirements. Completion of Brampton Grow Green will help to position Brampton as a model for sustainable community building, management and operations.

It should be emphasized that, while Brampton can establish and implement new directions for its own operations and its plans for the City's growth, many actions that would contribute to improved environmental performance within the city are beyond its legislative control. The City cannot mandate where its energy comes from or whether citizens use public transit, as these are regional or personal choices. However, the municipality can work with its partners, such as residents, businesses and community and conservation groups, to provide alternatives to influence decision making and can demonstrate change through its own corporate decisions and actions.

Further, Brampton must take direction from other levels of government, in such areas as climate change, growth management, waste disposal, pesticide usage and emissions controls. But, there is also the potential to leverage policy directions and resources from other levels of government such as the Region of Peel's Climate Change Strategy and Healthy Community initiative, the Provincial Green Energy Act and the Federal Green Infrastructure Fund. While the focus of the Brampton Grow Green will be the actions the Municipality can implement to advance environmental performance, the Plan will also identify the partnerships and collaborations with key stakeholders and other levels of government that should be explored to advance progress in areas beyond the City's direct control.

Along with Brampton, many municipalities across Canada are engaging in numerous sustainable community approaches that are focused on improving their overall environmental performance.


Sustainable Community Approaches
Green Building Codes
Carbon Neutral Operations
Smart Grid City
Urban Village
Integrated Community Sustainability Plans
Performance Contracting
LEED ND Standards
Zero Waste
Climate Action Plans
One Planet Community
Community Energy Plans
Carbon Footprint
Green Prints

Chapter 2

Methodology

Working Method

Project Phases

The City of Brampton has retained Urban Strategies Inc. and Halsall Associates Ltd., to complete the City's Environmental Master Plan. The study process is anticipated to run from October 2009 until October 2010. The project is structured in five phases, each with its own deliverables, milestones, meetings, events and consultations:

Phase 1: Initiation and Discovery

Phase 2: Exploration and Understanding

Phase 3: Goals and Directions

Phase 4: Outreach and Action

Phase 5: Synthesis and Completion

Consultation

Corporate and community engagement is fundamental to the success of the Brampton EMP, and this is apparent in the extensive and multifaceted consultation initiatives that will occur throughout the project phases. The participation of the City's corporate stakeholders and Brampton's residents, businesses and community groups allows for an accurate and thorough understanding of existing sustainability practices and ensures that the resulting goals, objectives and targets reflect the environmental issues and needs of the community, and gain both corporate and community support.

As a core component of the project, the City and Consultant Team have and will continue to facilitate a series of stakeholder and community engagement opportunities comprised of meetings, interviews, focus groups and workshops. These forums allow for the participation of a wide range of stakeholders, including municipal and regional staff, conservation authorities, elected officials, the Brampton Environmental Planning Advisory Committee (BEPAC), business leaders, youth, academic institutions and the general public.

Committees

The Consultant Team is working with a Steering Committee and Technical Advisory Committee, which include representatives from City Council, City of Brampton staff, the Region of Peel, Credit Valley Conservation and Toronto and Region Conservation Authority. The Committees provide overall support and direction, assisting with idea formation, identification of issues and resolution of conflicts and have played a large role in developing the vision, principles and goals of Brampton Grow Green. In addition, the Consultant Team met separately with BEPAC and with City Councilors to discuss key issues and core directions. Committee members will be encouraged to participate in all upcoming public forums.

Work Completed to Date

Phase 1:
Initiation and Discovery

The purpose of the first phase of the project was to introduce the Consultant Team to City staff members of the Steering and Technical Advisory Committees and the City of Brampton. The project commenced with a ½ day tour of the City, guided by City staff, to document how Brampton is currently practicing sustainability, and identify gaps in sustainability and where more progress should be targeted. The focus was on both successes and challenges and included a visit to:

- Existing historic and new communities
- Employment areas
- Recreational facilities and amenities
- City parks
- Natural heritage areas
- Cultural heritage features
- Green buildings and infrastructure
- Transportation infrastructure
- Transit services and mobility hubs
- Energy production and distribution facilities
- Downtown Brampton

Following the City Tour, the Consultant Team met with the City Working Team (a core group of City staff overseeing the project) and the Steering and Technical Advisory Committees to:

- Introduce the project team;
- Discuss the project schedule and approve the work plan; and
- Obtain all relevant documentation and data available to conduct the study.

Phase 2:
Exploration and Understanding

The purpose of Phase 2 was to develop an in-depth understanding of the key issues facing Brampton through an overview of relevant policy, current conditions, policy and initiatives related to the environment. This was completed by collecting and analyzing information and data, such as:

- Reports and studies completed by and for various departments of the City;

- Reports and studies, completed by and for the Region of Peel and Conservation Authorities, that effect and influence the City and the community;

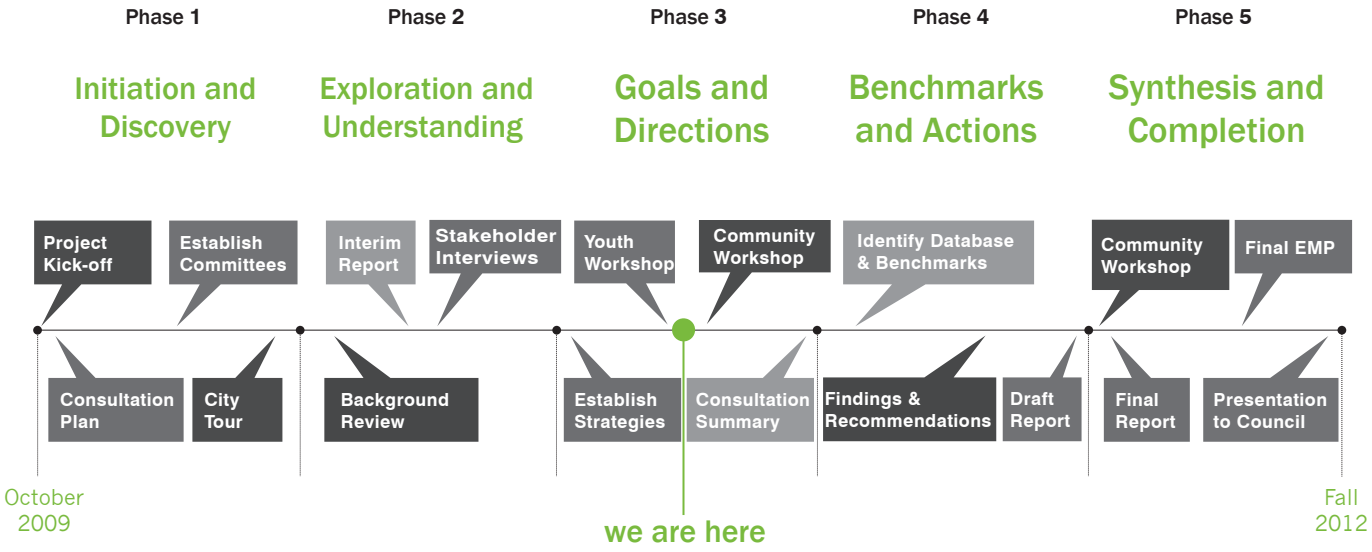
- Programs and activities that are currently within the City's responsibility; and

- Approaches to Environmental Master Plans that have been successfully implemented elsewhere.

A list of documents reviewed is included in Appendix A. These documents provided insight into the City's current perspectives and practices and future objectives, illustrated how the City addresses sustainability issues, and created a baseline from which new directions will be crafted and integrated into existing operations and the planning framework.

While many of these documents were prepared specifically for the City, and identify initiatives that are within the City's scope of responsibilities to change or finance directly, some were Regional or Conservation Authority documents or initiatives. These have significant

Brampton Grow Green: Project Phases



value to the community, and Brampton will seek opportunities to continue to collaborate on many of these initiatives, but it should be noted that they are legislatively beyond the City's authority.

Best Practice Review

As part of the background review, the Consultants drew upon their extensive sustainable community practice resource base to identify "best in class" precedents of environmental master plans implemented in communities with a similar scale and context to Brampton. This information will be used to inform the discussions regarding potential opportunities and directions for Brampton Grow Green. Analysis of these precedents as they relate to strategic environmental documents is presented in Chapter 3. This research will be expanded upon as the project progresses to identify best practices as they relate to benchmarks, targets and approaches to implementation. Brampton Grow Green will identify and summarize these best practices, influencing initiatives and programs across many areas of municipal responsibility.

Stakeholder Engagement

The engagement process was also initiated in this phase, including Stakeholder Interviews and two Focus Group discussions with City, Regional and Conservation Authority staff. The Sustainable Planning and Growth Management Focus Group, held in November 2009, dealt with the sustainability implications of current and projected growth and development within Brampton. The City Operations Focus Group, held in December 2009, focused on how the City functions and how it delivers its services with reference to current sustainability practices, related challenges and potential opportunities for improvement. The Consultants conducted Internal Stakeholder Interviews with City, Regional, Conservation Authority and Ministry of Natural Resources staff and External Stakeholder Interviews with key community

leaders, City vendors and the Mayor's Youth Team. A list of City departments interviewed and summaries of the key messages and results of the Stakeholder Interviews and Focus Groups is included in Appendices B - H.

The Focus Groups also permitted the Consultant Team to qualify and vet the information and data identified in the background document review. It is interesting to note that, while the City is engaged in numerous initiatives that improve its environmental performance; these programs are not generally well-known across City departments. One goal of Brampton Grown Green will be to raise awareness of the City's accomplishments to date.

A youth workshop was held in June 2010, with the Mayor's Youth Team. The youth were asked to report on a number of questions regarding environmental initiatives in Brampton. Specifically, they were asked what they considered the top three environmental initiatives currently taking place in Brampton; what they saw as the biggest obstacle to environmental sustainability; and what they imagined Brampton would need to do in order to be an environmental leader in 20 years.

Engaging the Broader Community

Utilizing the foundation of understanding gathered to date, the Background Report will be the basis to begin engaging the broader Brampton community and public. A series of public consultation events will be held, some in combination with the Strategic Plan Update. Opportunities will include engagement with youth, residents and community stakeholders. The focus of these events will be to gain public input on the snapshot of Brampton's environmental performance today, draft vision, guiding principles and goals, and initial directions outlined in this report.

Brampton Grow Green

The project was formally branded with a logo and a new name, Brampton Grow Green, which signifies Brampton's growth towards environmental sustainability. This message is represented by a logo which includes a tree growing from the 't' in the word Brampton to symbolize the 'Grow Green' initiative. Information has, and will continue to be provided to the public through advertisements in relevant publications, such as the City's Recreation Guide, updates to the City's EMP webpage and Council Reports.

Brampton
Grow Green

Chapter 3

Best Practice Research

Research

A key component of the background review was the research of award winning environmental master plans that have been completed in various cities throughout Canada. Knowledge of these environmental planning efforts will ensure that Brampton benefits from the experience of other municipalities. This chapter reviews the components and benefits of two general approaches to environmental master plans, followed by their application to four case studies, which highlight successful aspects related to approach, goals, targets and/or results.

Approaches to the Structure of an EMP

Each environmental plan is distinct. With respect to approach, some plans emphasize the creation of a long term vision, and adopt a 'back-casting' approach which identifies the policies and actions needed to achieve the vision. Others focus on the near term, by identifying projects that can generate immediate results, build momentum and establish a cycle of action and learning that will achieve incremental results over time.

Approach 1:
Developing a Long Term Vision to Guide Action

This approach recognizes that a municipality is a complex organization. The various 'branches' of its governance structure - including Council, committees/boards, departments, and agencies - can sometimes generate policies or actions that may compete with one another, or otherwise compromise a sustainable direction for municipal growth and change.

By developing a long-term framework that includes sustainability goals and objectives, this approach establishes a new set of playing rules to guide the work and decisions of all of the 'branches' of a municipal government towards a common environmental vision. Rather than working towards incremental change through isolated projects, this approach aims to achieve across-the-board change to sustainability practices.

A successful example has been developed by The Natural Step (TNS) organization, whose framework suggests the following four objectives as a useful starting point for planning teams as they work to develop their own unique list:

1. Reduce wasteful dependence upon fossil fuels, underground metals and minerals.
2. Reduce wasteful dependence upon chemicals and unnatural substances.
3. Reduce encroachment upon nature.
4. Meet human needs fairly and efficiently.

The Natural Step also suggests that once objectives have been determined, the planning team can reflect on how current conditions compare to these objectives. For instance, by asking: In what ways are we increasing wasteful dependence upon fossil fuels, scarce metals, etc.? This stage of the process aims to identify the greatest challenges facing the municipality, and to obtain a clear picture of where gaps exist between current initiatives.

Based on this understanding, the planning team can begin to articulate a long term vision to guide future action. The vision builds on the objectives already identified by considering how the municipality will look and function when the objectives have been achieved. For instance, by answering the question: What will our community look like when we eliminate the dependence on fossil fuels?

By using the vision and objectives as a 'green lens', through which to cast a critical eye upon the range of current and planned initiatives, the planning team can usefully evaluate whether each action will:

- move the municipality in the right direction;
- limit or compromise the success of future initiatives and the long term vision; and
- provide a good return upon investment of time and resources.

Where gaps exist, 'back-casting' from the vision can help identify new actions and/or initiatives to achieve the long term objectives.

Approach 2:
Adaptive Management

This approach is more descriptively termed a "learn by doing" model, and is generally focused on an incremental implementation of successive projects. It is a successful approach for municipalities suffering from 'Plan' fatigue, particularly when they have already completed several strategic documents (Official Plans, Transportation, Energy, etc.). By focusing on a number of tangible and engaging initiatives that involve as many community stakeholders as possible, this approach can build political momentum and organizational capacity. As initiatives begin to generate their own results, they also gradually create a critical mass of informed and involved community members, as well as partnerships. This approach places less emphasis on formal planning documents and relies on committed municipal staff and community stakeholders to develop, implement and monitor initiatives.

For example, the City of Pickering has created an Office of Sustainability to facilitate the integration of sustainability principles into decision-making across all sectors and to encourage inter-departmental interaction. The Office has spearheaded capacity building and training of all staff and, most recently, completed a "Sustainability Benchmarking Framework" visioning process that has identified five main areas and twenty-four sub-areas of sustainability that are of interest to the community. The municipality will now be in a position to better identify new sustainability projects that are supported with both operating and/or capital budget.

Case Studies

The following four case studies provide details of the EMP process used successfully in other communities

Case Study:

Imagine Calgary Plan

Long Range Urban Sustainability, Calgary, AB

In 2005, the City of Calgary began development of the Imagine Calgary Plan, a long range urban sustainability plan that would ultimately bring together over 300 community partners, experts and stakeholder groups. The plan views the city as a whole system, of which all the parts are inter-related, and applies a 100 year vision and goals to guide change across the community over the long term. The Vision describes a future that is built around a theme of strengthening connections between the people of Calgary and their communities, the natural environment, and to a broader sense of citizenship and responsibility. The goals are more specific. Overall, the plan aims to cut greenhouse gas emissions to 50 per cent below 1990 levels by 2036, and reduce per capita water consumption by 40 per cent. If achieved, these goals would ensure that Calgary reduces its ecological footprint to below the 2001 Canadian average of 7.25 hectares per person.

Plan Details

The project was organized into a 12-month work plan, involving three main phases. During the first phase, participants established the 100-year vision and goals. In the second phase, five working groups helped to develop the plan's 10 to 30 year targets and strategies applied to five major systems: economy; natural environment; governance; society; built environment and infrastructure. The third phase of the project, described as the legacy framework, is ongoing and involves collaboration with partner organizations. The partners commit to reviewing their operational activities in light of the 10 to 30 year targets, taking action and reporting progress towards the Imagine Calgary Plan.

Implementation

After establishing the vision, twenty-eight 100-year goals were developed to provide clear direction for the City's operating departments over the long term. Guided by these goals, the working groups created 114 targets to be achieved over 10 to 30 years. Highlights include a commitment to reduce greenhouse gas emissions to six per cent below 1990 levels by 2012, increasing to a 50 per cent reduction by 2036. This will have a demonstrable effect on Calgary's contribution to air quality and climate change. The plan also has a target to cut per capita water consumption by 40 per cent by 2036. The plan sees Calgary reducing its ecological footprint to below the 2001 Canadian average of 7.25 hectares per person by 2036.

These targets were developed using a systems-based approach, which recognizes the inter-relations between the various community systems (economy; natural environment; governance; society; built environment and infrastructure). The working groups determined the most effective areas for action by looking at historical trends in Calgary, as well as by using "back-casting methods" based on the 100-year vision and goals. This determined where intervention efforts have been most appropriate in each community system. As a long term vision for urban sustainability, the Imagine Calgary Plan is intended to guide and relate to other key planning documents, including Plan It Calgary, the integrated land use and transportation plan. Plan It Calgary establishes a long-term direction for sustainable growth, grounded in principles to foster a compact city form that encourages walking, cycling and transit, and preserves open space, parks and other environmental amenities.

Case Study:

Sustainable Pickering Initiative,
Pickering, ON

The City of Pickering, part of the eastern gateway to the Greater Toronto Area, has a current population of 94,000 and projections for significant growth over the next 25 years. To prepare for this growth, in 2007 City staff and Council developed the Sustainable Pickering Initiative, which comprises a range of programs and actions aimed at reducing the City's environmental footprint over the long term.

Plan Details

Rather than rely on a formal Plan to guide change, the Sustainable Pickering Initiative is managed by an Office of Sustainability – Ontario's first – within the City's municipal government and a Sustainable Pickering Advisory Committee, comprised of three City Councillors, and Mayor Dave Ryan. The Office is charged with promoting and coordinating sustainability initiatives amongst Municipal departments, and the wider community, through education, consultation and practical actions. The Initiative has five overarching objectives: healthy environment; healthy society; healthy economy; responsible consumption; and responsible development.

A number of representative projects are underway. Municipal buildings have undergone energy saving retrofits, (LED Lighting; high–efficiency heating and air-conditioning); new sustainability guidelines for builders (i.e. rooftop gardens and permeable paving); policies and design guidelines to achieve pedestrian and cycle friendly streets and pathways; and Sustainable Neighbourhood Development Guidelines have been completed.

Implementation

A major project completed by the Sustainable Pickering Initiative is the creation of two sets of development guidelines: one to help the city prepare overall neighbourhood plans, and the other to assist developers and builders to plan details for subdivisions, site plans and buildings within neighbourhoods. The guidelines will be used as input into the City's Official Plan review, and will also be used to prepare sustainability performance measures for new developments in Pickering, such as Seaton, a new urban community planned in central Pickering that will be home to 70,000 residents and 35,000 jobs.

Both sets of guidelines identify required and optional elements under nine categories: pre-consultation, environmental protection, location of lands, land use and distribution, density and compact built form, connections, pedestrian orientation, resource efficiency, and evolution and monitoring. Both guidelines will help Pickering meet its commitment to reduce its greenhouse gas emissions from municipal operations by 50 percent per capita and from the wider community by 35 percent per capita by 2016 based on 1995 levels.

Case Study:

EarthCare Sudbury

Local Action Plan, 2003

Sudbury, ON

Greater Sudbury became involved in climate change issues in the early 1990s with a goal to significantly reduce the amount and cost of energy consumption and greenhouse gas emissions by the Municipality, and to motivate similar actions by local industry, utilities and citizens.

In 1999, the Greater Sudbury Council approved the development of its Local Action Plan (LAP): Becoming a Sustainable Community to address these and other major environmental issues facing the City. A steering committee was formed comprised of two staff members and five City Councillors.

One of their first tasks was to engage key community leaders from all sectors of the economy and secure their participation in the development of the LAP, recognizing the Plan's potential to address issues and opportunities beyond the scope of municipal operations. Participating organizations became members of EarthCare Sudbury, an organization established to work with the City to ensure the long term successful development and implementation of the LAP. Member companies signed a "Declaration of Community Partners" to assume collective responsibility for developing the LAP, and to share knowledge and progress in regard to implementation of the plan. Collectively, EarthCare Sudbury assumed responsibility for ongoing monitoring, updates and periodic 5-year reviews of the LAP.

By the spring of 2000, 38 community partners had signed the declaration, and by October 2003, when the final LAP was adopted by Council, EarthCare Sudbury included over 100 committed partners. Membership included: Provincial and Federal government departments and agencies; universities and colleges; utility companies; businesses and industries; school boards; and non-profit community organizations.

Plan Details

When the planning process formally began in February 2001, over 100 participants from the 38 community partner organizations volunteered to sit on five working groups, to develop actions and objectives (environmental; economic; and social), with the aim to affect change across sectors of the economy, including: residential; industrial/commercial/institutional; public education and outreach; business plan development; and municipal operations. Many of the actions address multiple issues, organized by 17 categories: Land Use Planning; Energy; Transportation; Solid Waste; Landscape Recovery & Biological Integrity; Soils; Air Quality; Water Resources; Wastewater; Food; Pesticides; Eco-Procurement; Economy; Community Projects; Industrial, Commercial & Institutional Sector; the Residential Sector; Youth and the Environment.

In October 2003, the LAP was adopted by the Greater Sudbury Council and EarthCare Sudbury. The LAP is guided by three overarching goals. First, to enhance the environmental health of the City – to improve the quality of air, land, water and living systems – and as a result, to improve the quality of life for this and future generations. Second, to encourage citizens to take responsibility for the environment by carrying out local actions that contribute to sustainability and reduce emissions of greenhouse gases. And third, to share the knowledge and experience gained with other citizens.

Implementation

EarthCare Sudbury is charged with implementation of the LAP over the long term. This includes responsibility for periodic 5 year reviews, updates and ongoing monitoring. Funding for implementation is generated by annual membership fees, based on each member's ability to pay. This strategy aims to reduce the financial burden on the Municipality for implementation of the LAP.

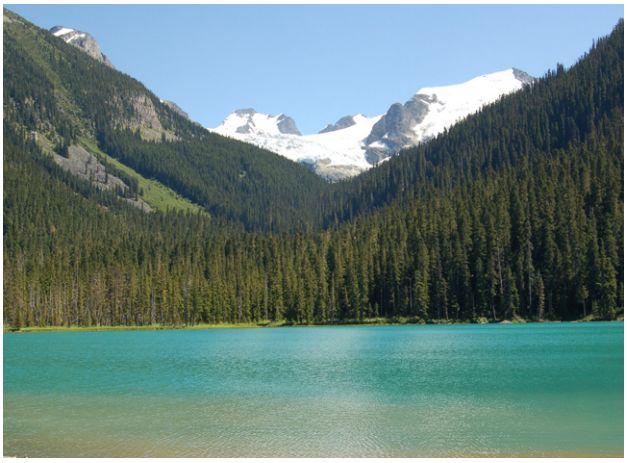
Monitoring of the LAP aims to measure progress against targets that have been set for each of the actions identified. The targets include measurable numeric values related to time. For instance, achieving 15 per cent reduction in water use by 2008. Targets were set after the LAP was adopted, by a community based process. Some targets address the short term, others are longer term in nature.

In 2008, the EarthCare Sudbury produced its first implementation progress report, highlighting initial achievements and challenges relating to the action areas identified in the LAP.

A key goal of the Action Plan is to reduce the City's use and dependence on non-renewable sources of energy. For instance, during plan development the City discovered that it spends about $400 million dollars each year on energy costs. The objective is to reduce those costs, while providing cleaner sources of energy, such as local green energy and renewable energy projects to be implemented over the next 50 years. For instance, under the energy retrofit initiative, the City has currently saved approximately $900,000 in energy costs and reduced greenhouse gas emissions by 26 per cent.

The Plan has also resulted in the creation of an "Alternative Energy Technical Advisory Committee", to keep the City at the forefront of new technologies; and the establishment of a Sustainable Energy Centre of Excellence at Cambrian College which will be testing various energy technologies and investment opportunities in renewable sources.

Case Study:



Whistler 2020 Plan,

Resort Municipality of Whistler, BC

Although Whistler and Brampton differ in economy, setting, and population, both cities share a common goal - to balance urban growth while protecting and enhancing the natural environment. In 2005 the Federation of Canadian Municipalities (FCM) recognized Whistler's 2005 long range strategic plan – Whistler 2020: Moving Towards a Sustainable Future – for its successful efforts to engage stakeholders and 16 community partner organizations in the development and implementation of a long term vision and action plan to lead the municipality towards long term sustainability.

Whistler's tourism-based economy supports a permanent population of 15,000 and up to 50,000 visitors seasonally. In the 1990s, as both the permanent and tourist populations grew, and the pace of development increased, the Municipality and the community came to understand that a new method of planning was required to more effectively address the environmental challenges associated with development. In 2000 the municipality adopted The Natural Step (TNS) framework to guide its environmental planning efforts, and initiated a public consultation process that resulted in the adoption of Whistler 2020 by Council in 2005.

Plan Details

Whistler 2020 is the Municipality's highest level policy document, and sets out a long term vision to maintain Whistler as a premier mountain resort while moving towards sustainability. The Municipality aims to achieve sustainability by the year 2060, and the plan sets out clear actions and targets required to achieve this vision. The plan also includes tools for monitoring, evaluating and reporting Whistler's process to achieve sustainability.

The Plan uses a 'systems perspective lens' to understand and plan for growth and change. The framework includes four guiding principles that set out the minimum requirements for a sustainable community to assist participants with the creation of the overall vision. Once established, planning participants then worked backwards ('back-casting') from the vision to identify the actions needed to achieve it.

1. Does the decision move us toward our vision, priorities, directions and success factors?
2. Does the action move us toward our TNS sustainability objectives?
3. Is the action a good financial investment?
4. Is the action a flexible platform for future actions toward success and sustainability?

By using these questions to evaluate potential actions and initiatives, the planning team was able to finalize a series of community-based actions organized under the following priorities: enriching community life; enhancing the resort experience; protecting the environment; ensuring economic viability; and partnering for success. Sixteen multi-stakeholder community task-forces used these priorities to develop and implement the action programs.

Implementation

The plan is supported by an annual monitoring program that tracks the progress of each proposed action towards the Plan's priorities. Whistler 2020 task forces review the data annually, and recommend actions to partner organizations and businesses. Since 2005, approximately 450 task force actions have been accepted for implementation by partner organizations. Of these actions, 70 per cent have been achieved or are in progress.

The Whistler 2020 Monitoring Program was developed through a combination of best practice research, consultation with data users, data providers, and the Whistler 2020 task forces. The planning team first conducted best practice research from other jurisdictions, as well as internal investigation to uncover data already available within the municipality. Final indicators met the following criteria: reliability; validity; resource intensity/ information availability; and comparability. Next, the planning team established processes to collect the source data, annually. Finally, each year the data is analyzed and preliminary findings are communicated in the annual Whistler 2020 Monitoring Report.

In the latest published 'scorecard' monitoring report (2008), Whistler 2020 achieved mixed results related to its four key priorities. Actions related to 'Economic Viability' and 'Enriching Community Life' achieved the highest degree of success, while 'Resort Experience' indicators revealed mixed results, and 'Protecting the Environment' faired poorly.

More specifically, positive indicators included:

- Total annual GHG emissions decreased by 4% on a three year average, and 11% on a one year basis.
- Waste diversion rates increased modestly over the period 2007-2008.
- The three year average proportion of Whistler's workforce living locally increased on a three year average to 79%, exceeding the set target of 75%.
- The number of official Whistler 2020 partners
- increased by 22 between 2007 and 2008, to a total
- of 48 organizations.

Lessons Learned

Areas for improvement include: energy use; incomes below costs; development footprint; material use; and water use.

Each best practice has developed approaches and benchmarks to target their specific sustainability goals and issues. There are several elements from these best practices case studies that have application to Brampton Grow Green, including:

- Mitigating and adapting to the impacts of climate change is a major driver for EMP's, with objectives often targeting greenhouse gas emissions, air quality, energy usage and the city's ecological footprint;
- EMP's need to guide and coordinate with other key policy documents, such as Official Plans, Master Plans (Transportation; Infrastructure; Operations, etc.), and the Peel Climate Change Strategy, etc.
- Once clear long-term objectives and benchmark are established, specific actions need to be identified that will achieve them;
- Objectives and targets need to be clearly quantifiable so that they can be measured and monitored;
- Following a review of current environmental conditions, a community can begin to define what it means to be sustainable, and establish a realistic time horizon to achieve this goal;
- Whether shorter or longer-term, plans comprehensively seek to address the issues and relationships between a wide range of topics, including:
  - economy
  - natural environment
  - municipal governance
  - society and culture
  - education
  - infrastructure
  - energy
  - transportation
  - solid waste
  - land use planning
  - air, water and soil quality;
- Actions are not limited to government operations and often target partnerships with private developers, industries, institutions and citizens;
- A wide range of community stakeholders participate in the visioning, preparation, implementation and monitoring of the plan; and
- The plan provides a mechanism for periodic monitoring and review of goals, targets and actions.

Implications for Brampton Grow Green

Currently, Brampton's environmental programs reflect an adaptive management approach to sustainability, where the City learns by doing. Brampton Grow Green will build on this strength with clear corporate directions based on a long-term vision combined with short-term actionable strategies that will include, monitoring, education, community engagement. Brampton Grow Green can create an environmental framework to guide decisions for Council and/or City's departments. Brampton Grow Green should also explore establishing an "environmental network" to facilitate the integration of initiatives across municipal departments, and with community partners to result in higher levels of environmental performance for the City of Brampton.

International best practices for sustainability will be explored in future phases of work

Heat gains in warmer months can be minimized through building design – Malmö, Sweden

Plantings integrated within surface parking lots absorb CO_2 and capture stormwater – Portland, Oregon

Channels manage water flow while nourishing plants and creating a community amenity - Hammarby Sjöstad in Stockholm, Sweden

Green Roofs regulate building temperatures, decrease energy consumption and reduce stormwater runoff - Ballard Library in Seattle, Washington

Chapter 4

A Snapshot of Brampton Today

The background research revealed a number of distinctive Brampton characteristics that have specific implications for preparing an EMP. All cities have their own strengths, opportunities and challenges, and Brampton Grow Green must address issues specific to Brampton's urban growth patterns, demographics, natural heritage, landscapes, movement systems and municipal buildings, facilities and services.

A Fast Growing Community

Brampton has and will continue to experience high rates of growth over the next few decades. No longer a small City, it is the third largest municipality in the Greater Toronto Area (GTA) and the eleventh largest city in Canada, with a population of just over 450,000. By 2031, the population is anticipated to reach almost 740,000 and the number of jobs is expected to be more than double, reaching approximately 320,000. This represents phenomenal growth by Canadian standards.

Amongst Canada's 20 largest cities, Brampton has experienced the highest rate of population growth: 33% from 2001 to 2006.

A contributing factor to Brampton's status as the third largest City in the Greater Toronto Area is the average number of persons per unit (ppu) for all housing types, which was 3.4 ppu in 2006, compared to 3.2 ppu in 2001. Brampton's average person per unit count is larger than the national average of 2.5 ppu. In 2006, Brampton had a total of 125,930 private dwelling units with 52% being single-housing units. The higher rate of persons per unit could possibly be linked to the large amount of single-family housing that was built in Brampton between 2001 to 2006; which was built for the purpose of accommodating larger household sizes.

Given the projected population and employment growth anticipated for Brampton by 2031, and the potential impacts of this growth including traffic congestion, declining air and water quality and depleting natural resources and agricultural lands, the EMP must establish clear targets that will ensure that Brampton will Grow Green. Quantifiable targets are necessary to guide future key decisions to achieve a more sustainable approach to:

- infrastructure to service new and existing communities;
- the scale of built form in new and existing communities;
- integration of land uses; and
- conservation and management of natural resources.

Although the historic downtown continues to develop and intensify, Brampton has grown predominantly outward over the past decades

Brampton residents of all ages will help to successfully implement the Environmental Master Plan

Distinctly Young and Diverse

With just over 175 ethnic minorities and 69 different spoken languages, Brampton's minority population is the fifth largest in Canada. Visible minorities accounted for approximately 57% of Brampton's total population in 2006 (a total visible minority population of approximately 246,150 individuals). East Indian is the most common ethnic origin in Brampton with approximately 111,500 individuals or approximately 25% of Brampton's total population. Integral to understanding future growth patterns and trends is the general age demographic of a city.

In Brampton, the current age profile is younger than the national average, with a median age of approximately 33 years old compared to the Canadian average age of 39 years. A younger population helps to support a healthy economy, active lifestyles and a vibrant community. Brampton has acknowledged the importance of meeting the unique needs of the younger cohort by placing an emphasis on recreational facilities and programs, long-term planning and economic viability.
As this young cohort ages, a prominent challenge for Brampton will lie in its ability to preserve, protect and enhance the sensitive natural heritage resources and environmental features for next generations to appreciate and enjoy well into the future.

While these factors distinguish the character of the Brampton community today, they are also important when identifying educational and communication strategies that will affect the City's environmental performance.

Brampton Grow Green must be clearly communicated, understandable and meaningful to Brampton's diverse and young communities since the success of the plan will require the City and its citizens to work together as stewards of urban and natural environments.

Preparing for Future Growth and Change

Over the last 50 years, Brampton has grown from a small town to a large City. Like many communities, Brampton's urban development over the last few decades has been directed to separating residential and industrial land uses, and connecting its neighbourhoods through the creation of an extensive road network, making cars the principal mode of transportation. This segregation of living and working, and dependence on the car, for even daily needs, has created an urban condition with significant impacts on Brampton's built and natural environments. Brampton's efforts to revitalize its downtown, introduce higher-order transit and related transit supportive development patterns, and expand its green infrastructure and system of stormwater management ponds, are important steps to retrofit the City to a higher environmental performance and quality of place.

Brampton Grow Green must provide direction as the City plans for and constructs new communities, to conserve, enhance and balance the sustainability of the built and natural environments. Recent plans for new communities, such as the Mount Pleasant Secondary Plan, provide examples of significantly advanced approaches to environmentally sensitive planning that proposes walkable communities, transit oriented development, and the

As Brampton plans for growth, communities must be designed in a manner that will enhance and balance the sustainability of the built and natural environment

protection, restoration and enhancement of the natural heritage system.

Brampton Grow Green must identify opportunities to 'green' the City's significant employment areas as new investment and job growth occurs. The 'Pearson Eco-Business Zone (EBZ)' vision is to transform the industrial/commercial business area around the Toronto Pearson International Airport into a community recognized for its competitive, high-performance and eco-friendly business climate. The Pearson EBZ seeks to 'green' the businesses, infrastructure and the natural environment throughout the area. Similar efforts to 'green' Brampton's existing employment lands offer strong potential for improvements to the City's environmental performance and will strengthen the City's economic competitiveness, including triple-bottom line benefits, and attract green businesses.

Brampton Grow Green must also consider existing communities that will be transformed through intensification and redevelopment as Brampton transitions into a more mature urban state. Downtown Brampton and the Central Area is a designated Urban Growth Centre, and is intended to be a vibrant and diverse focal area for employment, commercial, recreational, cultural and entertainment uses.

Initiatives to promote mixed land uses, green infrastructure, natural features, open space linkages and enhanced transit will be key elements to be achieved through intensification and redevelopment to ensure healthy, fiscally sustainable and vibrant neighbourhoods.

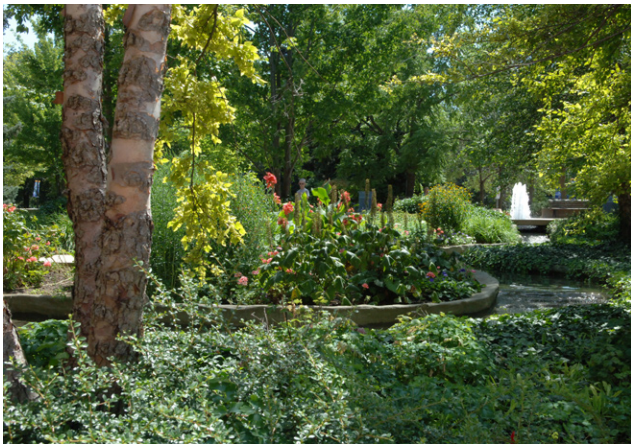
Current Environmental Assets

The physical environment and landscape characteristics of Brampton reveal an evolving pattern. Historically, clearing for agricultural land resulted in substantial loss of natural heritage systems. Since the 1950s, urban development has rapidly transformed the agricultural lands to a suburban landscape. More recently, planned growth has adopted a more strongly integrated approach to natural systems and development patterns.

Today, Brampton's environmental features are highly regarded by the community, are considered distinguishing assets and are the focus of many strong community stewardship initiatives. These features are also vital to the long term environmental health of the City.

In particular, the following elements contribute to the valuable asset base of Brampton's natural environment:

- 4 Watersheds and 5 significant valley systems
- 14 Lakes
- Credit River, the last remaining coldwater fishery in the western portion of Lake Ontario
- 4 tributaries of the Credit River and the West Humber River tributaries provide habitat for Redside dace, an endangered fish species
- 4,600 hectares (11,400 acres) or 18% of the municipal land base currently identified as natural heritage system
- 400 parks, 2,428 hectares (6,000 acres) of parkland and natural areas in public ownership



Parks and open spaces add beauty to the City but also perform vital ecological functions, by managing stormwater and absorbing pollutants such as CO_2

- 682 hectares (1,685 acres) of conservation areas, including Claireville and Heart Lake Conservation Areas
- 200 hectares (500 acres) of Greenbelt and 5 Greenbelt river valley connections connecting Brampton to the Niagara Escarpment and Lake Ontario
- An average of 15% tree coverage across the City
- A total of 3,618,000 trees
- Over 90 kilometres of existing trails and pathways with another 400 kilometres planned until 2031
- Interregional trail connections (proposed) to the Cities of Toronto, Vaughan and Mississauga and the Town of Caledon
- 115 existing stormwater management ponds and plans for more than 160 additional ponds by 2026
- Ice protection berm in the Village of Churchville
- 100-year flood diversion channel in downtown

Establishing a Clearly Defined Corporate Direction

With approximately 200 environmental initiatives currently underway, it is clear that high-environmental performance is an important issue to the City, Council and its employees. However, these initiatives are not necessarily well known across City departments, within City Hall or throughout the community.

A review of current documents, initiatives, Stakeholder Interviews and Focus Groups, was conducted as part of the project reconnaissance, and a common theme emerged: although individual City Departments pursue environmental initiatives, the emphasis on environmental priorities varies by Department, due to a lack of consistent corporate targets on issues pertaining to environmental performance.

For example, Brampton leads many municipalities in its environmental performance in advancing transit service and fleet operations, and these initiatives are achieving measurable progress in reducing the City's environmental impact. For instance, the purchase of Smart Cars and Honda Civic Hybrids, as part of the City's Green Fleet Plan, have reduced the City's CO_2 emissions by 32,000 kilograms per year and saved the City $13,000 in fuel per year. However, in other areas, many current practices are not leveraging long-term environmental benefits and/or not performing at a level that would be considered leading edge. There are opportunities to augment these programs and activities, as well as improve the manner in which they are managed, communicated, monitored and

With the development of Brampton Grow Green, the City of Brampton is on its way to building and strengthening its corporate commitment to environmental sustainability

delivered in order to successfully advance Brampton's environmental performance. The City will also need to ensure that environmental initiatives, programs and activities are integrated across department mandates, to leverage staff's expertise, time, and budgets and to achieve mutually beneficial objectives and targets.

In addition to strengthening corporate efforts and synergies, the City, through its strategic documents, land use planning and municipal operations, has an important community leadership role to:

- demonstrate environmentally progressive and sustainable practices;
- define the requirements for the design and construction of new communities;
- sustainably construct, manage, program, and maintain municipal facilities and services; and
- promote staff and community education, awareness and engagement - Brampton will adopt a doing by demonstrating approach.

Brampton Grow Green will celebrate the City's existing environmental successes and begin to leverage these diverse efforts through knowledge sharing and integrated decision making to build awareness of these accomplishments between individual departments, employees, Council members, interest groups and residents.

The creation of the Environmental Master Plan, together with the Official Plan and the Strategic Plan, will define strong corporate direction for Brampton's current and future environmental performance level.

Chapter 5

Current Environmental Initiatives

Current Environmental Initiatives

A key step in creating a snapshot of Brampton today was to understand the extent and nature of current environmental initiatives.

To do so, an overview of relevant Provincial, Regional, Conservation Authority and City documents, policies and programs was conducted. Not only were the number of initiatives considered but also how each relates to enhancing the environmental performance of the City. The inventory of initiatives is a work in progress, as new initiatives are being discovered or established as the EMP process unfolds. Through the community engagement process, it is anticipated that many other community and stakeholder-based initiatives may be identified. However, the snapshot of current environmental initiatives summarized in this report, provides insight into the areas of current strength in Brampton and areas where additional progress may be a focus in Brampton Grow Green.

This overview was conducted by analyzing a variety of data resources which included:

- Municipal, Regional, Provincial and Federal policy documents
- Review of the City's infrastructure, transportation, natural heritage and growth management initiatives
- City of Brampton website and communication materials
- Current and future environmental initiatives/programs
- City standards and guidelines
- Stakeholder Interviews and Focus Groups with Municipal, Regional and Conservation Authority staff
- Meetings with the City Working Team and Steering and Technical Advisory Committees which includes representation across all City departments
- Additional meetings with BEPAC, Council members, Municipal departments and agencies

The results are captured in several formats:

- The Canvas of Environmental Initiatives (Appendix I);
- Maps (Appendix J); and,
- An Assessment of Current Environmental Initiatives (Appendix K)

The Initiatives listed in Appendix K include major undertakings, identifying those with the most direct and measurable impact on Brampton's environmental performance. Together, these elements provide the basis for an initial assessment of Brampton's current strengths, challenges and opportunities for advancing the environmental performance of the City.

Strengths in Environmental Performance

The City of Brampton has demonstrated its commitment to the environment with approximately 175 initiatives that protect, restore and enhance the City's current and future environmental systems. Of these initiatives, there are several cases that exemplify high environmental performance and contribute to advancing Brampton's sustainability by employing innovative strategies that achieve direct and measurable environmental targets, raise awareness and stewardship across the City and advance the health and quality of Brampton's natural resources. These include:

- Forward Thinking Fleet
- Advancements in Transit Services
- Green Infrastructure
- Integrated Natural Heritage Management
- Planning for New Communities

Several maps (Appendix J) have been created to further demonstrate many of these successes. Although they do not pinpoint all of Brampton's initiatives, they do encompass a range of themes - Natural Heritage, Mobility, Development and Infrastructure – and showcase Brampton's greatest environmental achievements to date throughout the City. The maps are not meant to be static but are to be revised as Brampton develops new initiatives and implements the recommendations in the EMP.

Natural Heritage Systems

The Natural Heritage Systems map illustrates the location and extent of natural heritage lands and how these features traverse the historic city structure, early suburbs, new planned communities and future growth areas. Over time, updates to the map will illustrate the conservation, and enhancement of ecological systems and the further integration of parks and natural heritage with Brampton's communities, with specific reference to:

- Changes to the location and extent of publicly and privately owned natural heritage lands and formally protected natural heritage lands
- The naturalization of valleys, rivers and lakes
- The location of parks and adjacent density of development

Mobility and Development

The Mobility and Development map highlights the connection between development (land use and density) and mobility (trails, transit service and transit hubs). Dynamic mapping will help to identify appropriate locations for new trails, potential for increased ridership on transit routes and further possibilities for the reduction of GHG emissions from vehicles through demonstration of:

- How mobility patterns and modes respond to changes in development (both new communities and infill development)
- How development responds to the increased provision of mobility options (new transit routes, increased service on transit routes, new pathways, etc.)

Built Green Infrastructure

The Built Green Infrastructure map identifies the location and extent of green infrastructure, including green buildings, renewable energy, L.E.D street lighting and stormwater management ponds. Over time, ongoing mapping will
illustrate the growth of green infrastructure throughout the City by tracking:

- New locations of green buildings and the percentage of total development (either in terms of number or GFA) that satisfies a LEED (or alternate) standard
- New locations of locally generated renewable energy and the percentage of total energy used in Brampton coming from renewable sources
- New locations of stormwater management ponds and the percentage of total storm water that is naturally filtered

Compact, electric and low-emission cars in Brampton's fleet release significantly fewer greenhouse gases

Brampton is one of the first municipalities in Canada to use biodiesel fuel in its fleet and transit vehicles

Forward Thinking Fleet

The City's Fleet Services is responsible for the purchasing, maintenance, operation and repair of all City-owned vehicles and equipment exclusive of transit buses and fire and emergency services vehicles. Currently, the department is undertaking a number of actions that contribute to high environmental performance. In 2003, under the leadership of Fleet Services, Brampton became one of the first Municipalities in Canada to use biodiesel fuel in their City vehicles. To further reduce emissions and operating costs, in 2006, Fleet Services began purchasing SmartCars and Hybrid vehicles for certain operations. In addition to fuel reduction initiatives, Fleet Services' Right-Sizing Program ensures that every City vehicle will meet the City's operational needs throughout its lifecycle but, when purchased, is subject to a cost benefit and environmental impact analysis to reduce operating costs and CO_2 emissions. Other initiatives include Fleet's anti-idling policy and development of a Green Fleet Plan (currently underway).

Advancements in Transit Services

With a steady increase in ridership over the last 5 years, Brampton transit has proven to be a leader in advancing the overall environmental performance of the City. Similar to Fleet Services, in 2004 Brampton Transit became one of the first municipalities in Canada to use biodiesel fuel in their buses. In 2008, each City bus was equipped with a bike rack as part of the Bike and Ride program – a green initiative that aims to encourage the use of both active and public transportation. Ridership is expected to further increase with the launch of the new Bus Rapid Transit (BRT) system, known as Züm. The new Züm line, which runs on diesel-electric technology, will operate along the City's key north-south Hurontario-Main Street and east-west Queen Street and Steeles Avenue corridors, reducing travel times and providing a well-organized stop layout system that will encourage ridership and make the public transit experience more efficient for Brampton residents. Additional green actions spearheaded by Brampton Transit include the implementation of the Transportation and Transit Master Plan and the SmartDriver program which teaches bus drivers how to drive more fuel efficiently. Brampton's web-based eRide program, Interactive Voices Response technology and NextRide program further supports transit users by making trip planning interactive and more efficient.

Using public transit increases road capacity and reduces the amount of pollutants released into the atmosphere

The Clean City Committee is one of many examples of citizen environmental stewardship in Brampton

Green Infrastructure

Green infrastructure is the dynamic complex of interdependent systems that animate our cities and allows them to function as healthy, sustaining environments. These systems include our traditional municipal infrastructure of pipes and ponds, the natural systems now integrated within the City fabric and the urban landscapes such as open spaces, urban agriculture and rooftop gardens.

In many areas, Brampton's operational programs are integrating new initiatives, including technology that will 'green' the City's municipal infrastructure and improve the City's environmental performance. Current programs and activities that are greening Brampton's municipal spaces and infrastructure include: Maitland Park and Hilldale Park North Wetland Creation and Spring Creek rehabilitation, third pipe systems to maintain surface/groundwater balance to natural features such as wetlands, stormwater management retrofits such as floating islands to improve for temperature modifications, surface and groundwater monitoring programs and Low Impact Development best management practices pilot projects. The greatest progress has been made in areas where there is an interface between the municipal and natural systems such as restoration programs for natural areas in park areas or storm water management approaches. As a rapidly urbanizing and growing community, there are many opportunities to leverage these approaches as a standard practice to all existing and future public facilities and sites within the City.

Integrated Natural Heritage Management

Brampton's natural landscape and riversheds are distinguishing features from an environmental function perspective but are also clearly recognized by the community as critical assets that contribute to the liveability and beauty of the City. In response, Brampton's environmental programs reflect integrated natural heritage stewardship and management that protect, restore and enhance the City's natural heritage system and environmental resources. Currently, the protected natural heritage system comprises 18% of the total land area within the City's urban boundary. Key to the City's planning and operational approach to natural heritage, are the partnerships and programs of the Region of Peel and Conservation Authorities, as well as community groups and stakeholders. Current initiatives such as watershed planning, climate change adaptation and mitigation planning, Greenlands securement, ecosystem modeling and natural heritage inventories have contributed to the increased understanding and protection of the natural functions within the City. The City's commitment to the environment is exemplified by community naturalization programs which anticipate the planting of approximately 24,000 trees, 200,000 shrubs and 60,000 native perennials by 2012. As the City grows, policies are in place that identify, protect, restore and enhance natural heritage features on private lands through the development review process.

Growth Management

Planning for New Communities

Recognizing the need to accommodate growth in a sustainable manner, Brampton has taken an innovative approach with the development of the Mount Pleasant Secondary Plan, the first Secondary Plan for the North West Brampton Urban Development Area. It has been developed with sustainable community planning that balances environmental, economic and social actions required to meet the demands of future growth. The plan encourages transit oriented design through the implementation of mixed land uses and transit supportive densities. It supports a high-standard of community design that includes alternative design standards and supports walkability. Further, through a landscape analysis and a systems-based subwatershed study, the Mount Pleasant community will have a highly protected, restored, enhanced and linked natural heritage system while accommodating the requirements of a complete community in an urbanized context.

Redeveloping and Intensifying the Built Area

Brampton' s growth management objectives also include achieving intensification targets of 40% in built areas, and achieving density targets of 200 persons and jobs per hectare for urban growth centres.

The Central Area is a key component of the overall planning framework for the City of Brampton having regional and Provincial significance, as a designated mobility hub (historic downtown core), the location for the Provincially-designated Urban Growth Centre, a major transit station at Bramalea City Centre, and a major transit oriented development corridor along Queen Street supported by Zum (and future expanded higher order transit). City planning policies seek to continue to reinforce its role as the "heart" of Brampton; the location for major institutional, residential, commercial, cultural and recreational activity. The ongoing revitalization and intensification within the Central Area is key to creating a walkable and transit-supportive core for the City.

The Central Area will be a destination and an attractive transit supportive pedestrian friendly place with sustainable liveable streets. In addition to the underlying planning policies, this is supported through use of targeted incentives for appropriate redevelopment, direct investment in infrastructure and facilities and dedicated organizational support. The City continues to refine the planning framework and seek new ways to support the realization of the vision for the Central Area. This includes implementing new tools like the "Development Permit System" that allow greater flexibility in the planning framework to secure important land use, urban design, streetscape goals and support environmental stewardship.

Moving Forward

The review of existing initiatives, programs and documents demonstrates that Brampton has a strong level of interest and commitment to effect change to promote environmental sustainability. Currently, the City is undertaking a multitude of actions that aim to raise the environmental performance of the City. Environmental performance is not to be a static condition, particularly for a community that is growing rapidly, and Brampton recognizes the need to identify and adopt leading edge best practices and adaptive environmental management. The City's current environmental plans, policies and initiatives must evolve to meet the challenges of growth, and redevelopment; mitigate and adapt to address the effects of climate change; implement new technologies; and understand the challenges as the City's natural heritage and open space systems mature. There is always room to augment and adapt programs or alter their means of delivery to advance the environmental performance of Brampton.

The following summary provides a synthesis of the key challenges and related opportunities that need to be considered in moving forward to achieve a higher degree of environmental performance.

Foster a Strong, 'Green' Corporate Direction

A clearly defined corporate direction will be essential to advancing Brampton's environmental performance. While many environmental programs and actions are currently underway, a corporate 'green lens' will be fundamental to identifying and prioritizing environmental performance initiatives as the City goes forward in its business as a land use approval authority and as a corporation. Increasingly, governments at all levels are advancing environmental sustainability as a core operating principle, as it is both an ecological imperative and a key element of competitive advantage. Council's leadership and direction will ensure that environmental sustainability is a key consideration for all municipal staff and will increase effective delivery of environmental initiatives. Environmental sustainability should be an imperative when developing City plans and policy, and when assessing capital projects, operations and programming, or infrastructure systems. The City has many roles, including that of a policy maker, an approval authority, municipal service provider, a major employer, purchasing agent, community leader, land owner and a facility operator. In all these roles, Council and staff decisions have the potential to effect significant change in Brampton's environmental performance.

Coordinate and Connect Environmental Actions

Coordinating City staff and the implementation of environmental initiatives will ensure both corporate and community awareness and appreciation of the City's environmental efforts. City staff is often focused on activities occurring within their department, and the preparation of the EMP has already increased corporate awareness and sharing of knowledge on sustainable initiatives. The City's 'Portal' is a great opportunity to advance internal coordination, information and data sharing, and lessons learned.

The City recognizes that the many plans, programs and activities developed by regional and agency partners directly benefit the City's human and natural systems. The continual coordination and integration of the efforts of all levels of government and related environmental agencies to support and leverage each other's initiatives and programs will aid Brampton's environmental successes.

Continual communication and increased awareness of the community's environmental efforts needs to occur between City staff, community and business stakeholders and residents. The City's new external Portal and its dedicated environmental webpage will improve the City's ability to engage and communicate with the community, and to showcase environmental success and progress, to ensure that Brampton is leveraging all efforts toward enhanced environmental performance.

Celebrate and Build on Successes

The City has made notable progress in key areas over the last 10 years including:

- a 10% increase in transit ridership year over year;
- a City and transit fleet comprised of fuel efficient vehicles that use alternate green fuels;
- a comprehensive stormwater management (SWM) system involving over 150 SWM ponds which treat stormwater before it is discharged to the local water systems;
- ecosystem planning for new communities such as Mount Pleasant that advance compact forms of development, conserve natural heritage systems and integrate transit and land uses;

- restoration, enhancement and naturalization of the City's natural heritage areas; and
- environmental education of the community combined with annual clean-ups of the open space.

The City's government partners and community stakeholders have also made notable progress in key areas including:

- The Conservation Authorities watershed and natural heritage strategies, studies and data bases;
- The Region of Peel's Water Smart Peel water efficiency program, aims to educate residents about the importance of water conservation;
- Sustainable Neighbourhood Retrofit Action Plan (TRCA/ Peel/Brampton partnership);
- Partners in Project Green which created the Pearson Eco-industrial Zone (TRCA, Peel, Brampton, Mississauga and Toronto).
- Peel District and Dufferin-Peel Catholic District School Boards, EcoSchools Program e.g. Heart Lake and Sandalwood Parkway Secondary School Plan

These successes should be shared within and beyond the City to advance awareness and education about what Brampton is doing now, as a corporation, an approval authority and a community partner, and why these efforts will have an environmental benefit to create a healthy, vibrant city in the future.

Despite these notable successes there are opportunities to undertake sustainable best practices to demonstrate Brampton's leadership and effect positive change in the City's environmental performance including:

- local energy conservation measures;
- local, institutional and corporate waste management practices;
- greening of municipal operations and facilities including parks, buildings and infrastructure; and,
- greening of employment areas.

Through subsequent phases of the study, a best practices review, and the identification of actions and strategies will be undertaken for both these issues and additional areas that arise through further analysis.

Manage Resources Effectively

Municipalities are under increasing pressure with limited financial resources to accomplish their legislated responsibilities, and their economic, social, cultural and environmental mandates. In times of economic recession, a key challenge to environmental sustainability is prioritizing limited staff and capital resources. For example, there are key initiatives such as the Lakes Management Program that have identified priorities to sustain the environmental health of these natural features, but have few capital dollars assigned to implement these strategies.

As a Corporation that acts as an owner, operator and programmer of many facilities, the City must factor in the long term returns on investment offered from green buildings and facility operations when allocating resources and making budget decisions.

As a civic leader, the City of Brampton is responsible for informing, advocating and performing in an environmental manner to foster a long-term legacy of sustainability for its community. By setting an example for residents, businesses and developers, the City will be in a better position to ask their partners to participate or contribute to the City's sustainability goals.

Finally, Brampton can take advantage of various funding sources and partnerships, including the federal Gas Tax program and Federation of Canadian Municipalities (FCM), to leverage existing municipal resources to develop and advance environmental programs that improve the City's sustainability. However, to access these funds, the City must have strategic plans in place that guide sustainable programs, such as an ICSP an energy

management strategy, and an integrated Transportation and Transit Master Plan.

Promote Education and Awareness

Cities are places of complex and interdependent built and natural systems. The cumulative environmental impacts we make in our daily decisions need to be understood at an individual, business, community and municipal level. A key challenge for implementing Brampton's existing and future environmental programs, whether naturalizing public spaces or implementing facility recycling programs, will be ensuring that City staff, businesses and the community are aware of, and understand the value that, such initiatives have on improving the City's environmental performance. Education, information and engagement programs will be key components to making these links and enhancing awareness. This information can be integrated into other City programming and communication materials, in City facilities, or through existing schools (such as the Eco-schools Program) and coordinated outreach programs such as those provided through the Mayor's Youth Team and High School Green Club.

Monitoring Progress and Effectiveness

The City of Brampton collects data and information for numerous initiatives and programs, as well as short term monitoring for feature specific performance; however, this effort is not geared to define the effectiveness and/or performance of the City's environmental efforts. Brampton also participates in monitoring programs managed by the Province (e.g. Air quality stations); Region (e.g. transportation and transit) and conservation agencies (e.g. integrated watershed, groundwater, etc.), and directs land use planning based on recommendations derived by watershed and subwatershed plan site characterization, monitoring and modeling information.

The City will need to determine what environmental standards, criteria and tools that they will employ to both benchmark and analyze the effectiveness of the City's sustainable programs and operations. The City's environmental initiatives and choice of benchmarks, standards and criteria should be undertaken using the principle of adaptive management, wherein new information, science and monitoring information are fed back into the process to inform management programs and actions.

Adaptive Management

Adaptive Management recognizes the complex nature of the environment and the challenge of managing in the face of uncertainty and incomplete knowledge. Management plans need to be made using the best possible information and are updated periodically to reflect the improved information and understanding gained through experience and monitoring of the system. As a municipal and community leader, the City must also be concerned with ensuring that:

- Corporate operations and land use development are based on a life cycle approach that recognizes and plans for the long-term management of corporate buildings, facilities, structures, infrastructure, public lands, and environmental programs and activities;
- Environmental actions are prioritized within a cost-benefit framework that has regard for legislative-regulatory requirements, measurable environmental results, technological realities, environmental trends and issues, and public input;
- Municipal departments and staff are empowered to adapt programs, services and activities, as required, to respond to current environmental trends, issues and requirements; and
- Environmental programs, services and activities are assessed to ensure that they are achieving the desired end results, and that those results can be reported in a transparent way.

Chapter 6

Vision, Guiding Principles & Goals

Draft Vision, Guiding Principles and Goals

The City Working Team, in conjunction with the Steering Committee and Senior Management, have developed a draft Vision, Guiding Principles and Goals that will provide a foundation and overarching direction to guide the development of Brampton Grow Green. The following preliminary draft will be a key component discussed through the community engagement process.

Brampton Grow Green Vision

Protect the Future: Brampton is a community that will conserve, enhance and balance our natural and built environments to create a healthy, sustainable city. We will carry out our responsibilities to meet the needs of the present community without compromising the ability of future generations to meet their own needs.

Guiding Principles

Leadership
We will be innovative, lead by example, and advocate environmental sustainability within and beyond our community. Best practices from around the globe will guide our operations and shape our policies and plans.

Responsibility
We will integrate community and natural systems sustainability into everything we do. We will learn of trends and initiatives beyond our community to better anticipate Brampton's environmental needs and concerns.

Balance
We will achieve our environmental goals within a balanced environmental, social, cultural and fiscal agenda that considers the direct and indirect costs of our actions and inactions.

Accountability
We will be open in our decision-making and actions, and we will monitor, evaluate and report our environmental progress.

Stewardship
We will inform, educate, engage and participate with the community to protect, conserve and enhance our natural and built environments.

Partnership
We recognize the need for, and value of, partnerships with other levels of government, conservation agencies, conservation groups, stakeholders and the community, to deliver and implement environmental programs and activities to improve and benefit the health and diversity of our natural and built environments.

Goals

Goal 1:
Invest in PEOPLE to create a healthy, liveable and safe community.
Advance the awareness and engagement of the Brampton community in healthy lifestyles, environmental stewardship and the green economy to manage choices that impact the built and natural environment.

Objectives:
1. Foster active, healthy lifestyles.
2. Engage Brampton's stakeholders, community and public in establishing environmental directions, priorities and networks.
3. Track, monitor and share data on the City's environmental performance.
4. Increase stewardship resources and opportunities to conserve and enhance Brampton's environmental assets.
5. Increase awareness of link between city structure and environmental and human health.
6. Promote a 'culture of conservation' and green economic development.

Goal 2:

Reduce impacts on AIR quality.
Improve air quality to reduce human health impacts and limit contributions to climate change.

Objectives:
1. Decrease corporate and community emissions released by vehicles, buildings and operations.
2. Create walkable, bike and transit supportive urban environments.
3. Enhance natural areas and increase the urban tree canopy.
4. Develop a strategy to support active transportation and traffic demand management.

Goal 3:
Protect and respect WATER as a non-renewable, life critical resource.
Conserve water, and manage rainfall and snowmelt as a resource to improve the quality and quantity of water returned to the environment to limit disruption to water flows and contamination of water sources and habitats.

Objectives:

1. Protect and enhance water quality.
2. Reduce consumption of potable water.
3. Increase use of captured or recycled site water.
4. Reduce and manage surface runoff as stormwater.

Goal 4:
Manage LAND to sustain the natural environment.
Conserve, enhance and use land efficiently to foster healthy communities and ensure diverse, functioning natural heritage systems.

Objectives:

1. Protect, restore and enhance natural features, functions and linkages.
2. Limit and manage the environmental impact of new development.
3. Promote native species, increase urban tree canopy and enhance habitat to support natural community health, linkages and biodiversity, absorb CO2, and reduce the heat island effect.
4. Increase densities and sustainability of urban communities areas to take advantage of and improve existing and planned infrastructure.
5. Plan for walkable and age-friendly communities.
6. Increase local food production and use.

Goal 5:
Reduce ENERGY consumption and manage the impact of energy usage on our environment.
Reduce energy use, particularly from non-renewable sources, to limit greenhouse gas emissions, preserve natural habitats and resources, and increase energy security.

Objectives:

1. Manage the demand for energy.
2. Improve energyefficiency and performance of new and existing buildings and operations.
3. Increase the use of renewable energy, both in terms of on-site generation and as a portion of demand for municipal facilities.

Goal 6:
Reduce and manage the material considered WASTE.
Reduce waste generation to limit greenhouse gas emissions, preserve habitats and resources and decrease management costs.

Objectives:

1. Consider waste as a resource for the input stream.
2. Decrease consumption and increase recycling of organic and non-organic materials.
3. Promote on-site waste management strategies: construction waste, household, institutional, energy.
4. Increase community awareness of waste management strategies to rethink, reduce, reuse, recycle and repair
5. Foster partnerships with business and industry to demonstrate waste management strategies.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Chapter 7

Establishing Directions

Core Components

Building on the City's current range of initiatives, one of the goals of Brampton Grow Green is to establish a clear set of priorities for future environmental actions based on an understanding of what will provide the greatest positive impact on the environment. The following six core components have been identified under which directions, actions, benchmarks and metrics will be organized in Brampton Grow Green:

Air, Water, Land, Energy, People & Waste.

The first three components, air, water and land, are core elements of the environment that sustain a city. Measures to protect these resources and reduce the City's impact upon these resources will have a strong influence on Brampton's quality of life and its ability to attract and retain businesses and residents, and its overall environmental performance.

The remaining three elements, energy, people and waste, are key areas where, through environmentally-focused innovation in the City's urban functions and operations, there is the potential to effect the conservation of its air, water and land resources, and consequently, its environmental performance. These six elements are functionally and programmatically interrelated, and from an environmental impact perspective, need to be considered as a system.

The following discussion describes the significance of each element, the imperative and the opportunity to effect change within each. These core elements will form the structural basis for Brampton Grow Green, and each will be addressed further as the focus becomes setting directions, benchmarks and actions in Phase 4 of the project.


Air
Water
Land
Energy
Waste
People

Air: Clean air is fundamental to life. Poor air quality in cities is increasingly being recognized as contributing to respiratory diseases, including increased levels of asthma, particularly amongst children and the elderly. Although the effects on natural ecosystem, including plants and animals within urban settings are less well-known, it is also a key consideration for environmental health.

Water: Access to clean potable water needs to be recognized as a limited resource. We depend on water for drinking, a healthy natural environment, household and commercial use, recreation, sewage treatment and many other functions. Water conservation and water quality protection are both critical concepts, best addressed at a watershed scale.

Land: While we use land in cities for housing, transportation, industry and recreation, we also need land to provide for food production and support vegetation for animal habitats and CO_2 absorption. The consumption of land must be appropriately balanced to accommodate all of these uses.

Energy: Energy powers our cities, but is currently expensive to generate and harmful to human and environmental health. Reducing consumption reduces costs. Shifting to renewable sources improves air quality, as non-renewable fossil fuels – coal, oil and natural gas – emit greenhouse gases and other pollutants. Even renewable sources, such as hydro-electricity, have impacts which can destroy biologically productive lands and habitats.

People: To survive, humans need land and clean water and air. Yet our activities consume energy and produce waste, which directly affect the quality of the very elements that are fundamental to our survival. People are a fundamental element of the natural system, and our actions both as protectors, advocates and consumers of these resources must not exceed the carrying capacity of the environment.

Waste: Waste generation is the ultimate by-product of resource use. Materials that enter a City's waste stream are derived from natural resources, such as wood and paper products from our forests. Manufacturing processes to create materials generate emissions due to intensive energy consumption. Transportation to collect and dispose of waste has a detrimental effect on air quality. Re-cycling and reducing consumption preserves resources, decreases waste and lessens pollution.

Ground-level ozone and fine particulate matter are the primary components of what is typically called smog, and they pose the greatest threat to human health. Ozone is created when nitrogen oxides and volatile organic compounds combine in the presence of sunlight. In 2007, Peel Region reports that there were 11 smog advisories that lasted 31 days. With a growing population and the related increase in vehicle usage, and housing and industrial developments, there is a risk that air quality could further deteriorate.

What is the imperative?

Climate change is occurring at global and local scales. The City of Brampton recognizes that communities are on the front-line of the sustainability challenge and it is here where the effects of climate change will be felt because it's where people live, work and play. As such, the City joined in the partnership initiated by the Region of Peel with the City of Mississauga, Town of Caledon, Credit Valley Conservation and the Toronto and Region Conservation Authority to prepare a Climate Change Strategy for the Geographic Region of Peel. The City has recognized the challenges of climate change in its strategic plans (i.e. Official Plan, master plans) and guidelines, and its land use and natural heritage system planning, and understands the need to work with partners to address mitigation and adaption actions necessary for a changing climate. A climate change strategy will help to inform the preparation of Brampton Grow Green and move forward the City's Official Plan policies to address the challenges and economic impacts that climate change poses to environmental and public health, and municipal infrastructure and to develop a culture of conservation that supports the application of practical and progressive energy, soil, land, water and air conservation within our spheres of municipal responsibility. The City of Brampton will respond to climate change by reducing greenhouse gas (GHG) emissions (mitigation) and/or by adaptation to its impacts.

Environment Canada reports that emissions associated with transportation are the largest source of nitrogen oxides, and third largest sources of volatile organic compounds (VOCs). According to the City of Brampton, automobile drivers accounted for 68% of the modal share in 2006, compared to 8% who travelled by transit and 5% who did not use motorized vehicles. Moreover, trucks constitute a large percentage of traffic on the freeways and arterial roads through Brampton, ranging from 15-30% on the main trucking corridors (which include Steeles Avenue, Highway 7, Mayfield Road and Airport Road). Given the threats posed by the combination of nitrogen oxides and VOCs, reassessing conventional transportation and the movement of freight vehicles through the City are key variables to improving air quality.

How is it measured?

Air quality is a regional issue, while climate change is a global concern. The Ontario Ministry of the Environment provides daily Air Quality Index (AQI) readings that measure airborne pollutant levels at various locations in the province, including Brampton's Ambient Air Monitoring Site. The AQI and number of Air Quality Advisory days serve as indicators for quality of air in Brampton. Up to date information on Smog Advisory days in Peel is available at http://www.peelregion.ca/health/cleanairpeel/smog-advisory06.htm#smogad. The Intergovernmental Panel on Climate Change (IPCC) provides updates as to global, atmospheric CO2 concentrations, and the resultant risk to climate change. Potential metrics for air quality include vehicle kilometres traveled per person and total GHG emissions per capita and by sector.

Public transportation ridership and ownership of alternative-fuel vehicles can further indicate behavioural trends that impact air quality.

What initiatives have been undertaken?

Numerous transportation initiatives have been set in place by the City of Brampton to reduce the negative effects on air quality generated by automobile use. Brampton's Transit and Transportation Master Plan released an Air Quality Strategic Direction report providing recommendations to reduce emissions. Among these recommendations is an Air Quality Park with restricted vehicle access within the City, parking fee adjustments and the provision of High Occupancy Vehicle (HOV) lanes to encourage car-pooling.

Brampton's Transit and Transportation Master Plan (TTMP) currently provides truck counts for the heavy vehicle cordons, allowing for one to gauge the impact of freight transport through the municipality. Brampton's Züm Program aims to reduce the number of vehicle kilometres travelled by Brampton residents through the addition of three new BRT corridors and related service improvement to conventional services. Other transit initiatives include investment in TTMP objectives, connecting to inter-regional transit services and the purchase of 62 Zum diesel-electric hybrid buses. The anticipated reduction in travel times and improved accessibility to the public are expected to increase public transportation ridership.

The PathWays Master Plan and the Region of Peel's Active Transportation Plan, maps the existing 120 km network of existing bicycle and pedestrian routes throughout the City and Region and encourages emission-free transportation. Brampton was the first municipality in Canada to commit to the ongoing use of bio-diesel fuel in both transit and heavy-duty fleet vehicles. In addition, the City's fleet includes hybrid vehicles. All City vehicles are subject to an anti-idling policy.

The Peel Climate Change Strategy (PCCS) was prepared through a partnership of the Region of Peel, the Cities of Brampton and Mississauga, Town of Caledon, Credit Valley Conservation (CVC), and Toronto and Region Conservation Authority (TRCA) as a response to climate change and to recognize and promote what can be done at a local scale to mitigate and adapt to changes in our climate. Many of the actions presented in the PCCS build upon and complement the existing policies, plans and programs already being undertaken by the partner organizations. In this regard, the PCCS GHG Inventory is underway (i.e. corporate and community greenhouse gas inventories and targets, and air contaminants of concern), and the PCCS Implementation Plan, which will provide support for many of Brampton's environmental initiatives and programs.

What improvements can be made?

Supporting alternative transportation options, through public transportation, incentives for carpooling and alternative-fuel vehicles can help to reduce conventional automobile use by Brampton residents and those who travel into Brampton for work. Active Transportation, including Bicycle use and pedestrian activity, can be encouraged by maintaining and expanding bicycle and pedestrian infrastructure.

Emissions generated by industry and freight transport require a detailed view of the operational elements of the industrial sector to identify the factors affecting potential benchmarks for emissions reduction. For example, the

City of Pickering addresses reduced automobile use by encouraging new development to consider public transit and pedestrian-friendly design. Pickering's Sustainable Development Guidelines have requirements that plan for newly developed neighbourhoods to have at least 40 intersections per square kilometer, are located to ensure that daily amenities are within 5 to 10 minute walking distances, and have transit routes spaced at a maximum interval of 1,000 meters.

The Region of Peel has prepared a Healthy Background Study and Healthy Development Index - a joint initiative between Peel Public Health and Toronto Public Health, to develop a framework for municipalities to establish a mechanism to integrate considerations of health impacts into the land use development approvals process. These documents are intended to serve as a 'checklist' to evaluate the success of new developments in achieving minimum standards of community health and a forum to encourage applicants to justify their development decisions.

To reduce the air quality impacts of its fleet, the City of Ottawa purchased 202 hybrid transit buses which resulted in an annual reduction of 5,000 tonnes of GHG emissions and cost savings of $2,000,000.

Water

The City of Brampton contains a large number of natural lakes, ponds, rivers and streams within its urban setting. All of the City's rivers and streams flow south from the Greenbelt to Lake Ontario. Brampton's potable water supply is drawn from the Lake Ontario and treated by the Region of Peel, for use by the City of Brampton.

The City's sewage is collected and treated at two water pollution control plants in the City of Mississauga near Lake Ontario. These plants require periodic expansion, as the Region's population continues to grow.

The Region of Peel reports that the combination of potable water demands across all sectors in the Region (residential, industrial, commercial, institutional and municipal) amounts to about 500 litres per capita per day. The region's daily residential demands alone are generally between 280 and 300 litres per person. Natural gas is typically used for heating water and treating wastewater. The best way to protect water is to manage it on a watershed basis - protecting both water and the land it flows through.

Stormwater drains to the streams throughout the City of Brampton and eventually makes its way to Lake Ontario. Through the past 50 years of the City's urban development, watercourses and/or headwater drainage features have been eliminated, altered and channelized. Since the early 1990s, the City and conservation authorities have required development to implement greater measures to manage stormwater both during construction and at the build out of a neighbourhood. Stormwater management involves integrated best practices from sediment and erosion control, to quantity and quality control facilities (that has resulted in approximately 115 end-of-the-pipe stormwater

management ponds to date); to measures that can be implemented in rear yards, parking lots and along roads (referred to as Low Impact Development [LID] measures), and pollution prevention. All of these efforts are intended to provide greater water management to protect both life and property from the hazards of stormwater and flooding, and to protect natural features that are reliant on both surface and groundwater, particularly streams and wetlands that provide sensitive fish and wildlife habitat.

What is the imperative?

Contaminated runoff of stormwater, wasteful consumption of potable water, impervious surfaces, and the degradation of rivers from poor development and construction practices all threaten the health of Brampton's waters and their related ecosystems. Climate change also poses an increased risk to the integrity and longevity of infrastructure, from issues ranging from design, to maintenance due to storm damage, to potential disruption of services due to storm damage and/or loss of power.

As impervious surfaces accumulate within the City, stormwater runoff rates rise, increasing the likelihood of localized flooding and erosion, and causing pollutants within the stormwater to become more concentrated and delivered into the City's rivers, streams and lakes, and eliminating infiltration to the groundwater system. In addition, we also need to conserve our potable (clean) water as water treatment and pumping water to homes and businesses is one of the largest energy consumers in the community and in City facilities.

How is it measured?

Municipal water consumption is measured by the average daily volume of water used (in litres) per person. Water meters can be installed in new and existing buildings to track water use, allowing building owners to understand how their buildings operate from a water consumption standpoint. Stormwater runoff (rate of flow and quality of effluent) can be indirectly measured by the percentage of permeable to impermeable surfaces within the City.

The Canadian Council of Ministers of the Environment has adopted a Water Quality Index (WQI) that measures the severity of water pollution by tracking a number of variables (e.g. acidity, fecal coliforms and dissolved oxygen) and comparing them to water quality guidelines or site-specific objectives.

What initiatives have been undertaken?

Water management of surface and groundwater resources begins at the watershed scale, and requirements to maintain and manage hydrological, hydrogeological and fluvial geomorphological functions are interpreted at the subwatershed, neighbourhood and site scales to protect natural features, habitats and linkages. The area conservation authorities prepare watershed and subwatershed plans, and environmental hazard and ecological studies, and undertake monitoring, that provides information and direction to guide the City in protecting its water and aquatic resources.

To intercept stormwater before it reaches the City's streams, Brampton currently has approximately 115 stormwater management ponds and with continued urban development, will reach over 275 ponds by 2026.. Stormwater management refinement for secondary plans and plans of subdivision are defined by subwatershed studies and environmental implementation/functional servicing reports, and design criteria for ponds and sustainable best practices are based on local environmental conditions of the valley and watercourse corridors, wetlands and fish habitat.

The City of Brampton developed the 2009 Stormwater Management Master Plan, providing an assessment of current conditions and existing facilities, and a plan for implementing best management practices for developed areas and the ongoing management and maintenance of existing SWM ponds. The Conservation Authorities have prepared documents such as Low Impact Development Stormwater Management Planning and Design Guideline and Thermal Impacts of Urbanization and Preventative and Mitigation Measures that will support the City's implementation of stormwater management.

In 2012, the City will begin the Stormwater Management Retrofit & Enhancement Study to identify the appropriate steps to meet Provincial water quality targets as set out by Provincial policies, and explore opportunities and constraints to go beyond the Provincial Standards, including a "zero increase" objective in mass loadings of contaminants of concern. The study will assist development approvals in new secondary plan areas and how the City can improve stormwater quality in the built areas through redevelopment and intensification.

The City of Brampton commissioned a Lake Assessment and Management Study to assess water quality, sediment concentrations and the health of ecosystems associated with the City's lakes. The study proposes a monitoring program for each of Brampton's 14 lakes.

The Region of Peel has developed a Water Efficiency Plan detailing water-savings strategies such as leak detection, water audits and fixture replacement in the residential, industrial, commercial and institutional sectors, that directly relates to reducing the consumption of potable water.

What improvements can be made?

There are many technologies and measures available to conserve water onsite to either permit infiltration and/or to have for reuse. Infiltration of water can be encouraged by replacing impermeable surface materials such as asphalt and concrete with permeable paving systems, and increasing the vegetated areas on sites, including Low Impact Development measures such as bioswales and infiltration galleries. Green roof systems can similarly slow runoff. Rain barrels in rear yards and stormwater cisterns can be incorporated into buildings to store water for use in non-potable functions such as toilet and urinal flushing, landscape irrigation and custodial purposes thereby slowing stormwater run-off and reducing potable water consumption.

Partnering with the Region of Peel, area conservation authorities, stakeholders and residents will be vital to implement new technologies and measures that will protect our water and aquatic resources on both private and public lands.

An eco-solution is also to naturalize both public and private spaces, including reducing the extent of grassed lawns and manicured areas and replacing this landscape treatment with native groundwater, shrubs and trees that can provide wildlife habitat, and are more adapted to changes in climate and weather, particular drought conditions.

Reducing the demand for potable water is increasingly economical as the market now offers a broad selection of water-saving devices. Within residential and commercial buildings the focus is on washroom and kitchen fixtures, appliances, and cooling towers. Outside of those buildings employing high-efficiency irrigation systems is the focus.

With the City's annual growth rate of 6.6%, the demands on Brampton's land are increasing. With 6,000 acres of parkland and natural environment identified, Brampton has the potential to create a model green city.

What is the imperative?

Building a model green city means addressing two related imperatives: (1) protect, restore and enhance the health, biodiversity and connections between natural areas; and (2) reduce the encroachment on natural heritage lands and other greenfield areas by adopting best-practice approaches to natural area buffers, urban tree canopy, higher density development, and the sensitive placement of infrastructure.

Natural heritage lands provide a range of ecological functions that sustain our quality of life, and the broader health of the natural environment. For instance, these areas remove carbon dioxide from the air; preserve essential biodiversity and species habitats; improve water quality by filtering nutrients from runoff; enhance groundwater quantity by promoting infiltration; reduce surface water flows; provide educational opportunities and environmental awareness for Brampton citizens.

Encouraging more compact forms of new development and intensification of existing communities will reduce the consumption of Greenfield land, support walkable and transit supportive communities, and contribute to the protection of existing natural heritage areas.

How is it measured?

The protection and remediation of natural areas can be measured on a land area basis, the success of which can be determined through monitoring species trends and in the case of contaminated sites, levels of various contaminants. Natural heritage areas can be measured in terms of land area (or percentage of land area) dedicated to protected natural areas (i.e. valleys, woodlands and wetlands), the urban forest canopy, or hectares of parks/ green space per capita. Within the built environment, land impacts can be measured in terms of the density through measures such as floor area ratio (FAR) and floor space index (FSI).

What initiatives have been undertaken?

The City is undertaking leading edge natural heritage system planning through subwatershed studies, such as the North West Brampton Landscape Scale Analysis and Huttonville and Fletcher's Creeks Subwatershed Study that identify, protect, restore, enhance and link natural areas within the local and regional system, Within the Mount Pleasant Secondary Plan area, the existing natural areas occupy approximately 8% of the secondary plan area, the future natural heritage system will occupy approximately 18% of the community, and will be supported by green infrastructure, including stormwater management and low impact development measures, open space and parkland. The City supports and partners with the Region of Peel and Credit Valley Conservation (CVC) and Toronto and Regional Conservation Authority (TRCA) to undertake and implement numerous conservation initiatives, including a natural areas inventories, natural heritage system modeling, greenlands securement, invasive species management, natural areas restoration and naturalization, community forests and urban canopy management, environmental education, community stewardship, and pathways.

What improvements can be made?

The cultural landscape and ecology of the site can be considered during land use planning decisions. Beautification projects related to open space, such as Flower City and Brampton's Gateways should promote native and adaptive plant species to reduce irrigation demands and increase biodiversity and the urban tree canopy. Phosphate fertilizer use should be avoided in order to prevent runoff of chemicals into local waterways.

Reducing the impacts of new development on greenfield lands can be accomplished through the design of natural area buffers, the sensitive placement of infrastructure and higher-density and mixed-use development.

The City will be undertaking several projects in 2012 directed to environmental sustainability including:

• A Natural Heritage and Environmental Management Strategy - a comprehensive management framework that will provide corporate and community direction through goals, objectives and actions to protect, manage and monitor the City's Green Space;

• Sustainable Community Design Guidelines – Phase 1 - qualitative urban design and community development principles, and guidelines for the development of new secondary plan communities, block plans, site plans and infill development; and Phase 2, measuring the sustainability of new development (in partnership with City of Vaughan and Town of Richmond Hill) using sustainability metrics (i.e. quantitative performance targets) for new development applications.

Brampton currently has an urban forest coverage of 11%; in comparison, Hamilton has an urban forest coverage of 18% with a target to achieve 30% and Oakville has a coverage of over 29%. Brampton has an overall parkland coverage of 1.6 hectares per 1,000 people, based on active tableland parkland. The City's parkland coverage is supplemented by other natural heritage and open space lands.

To encourage more compact forms of development and transit supportive communities, the Region of York has developed a Centres and Corridors Strategy to guide the intensification of designated lands – in conjunction with improved transit service - towards a target of 2.5 FSI over the long term. This strategy recognizes that concentrating the highest densities and mix of uses along major transit corridors will support the creation of vibrant precincts that offer residents new opportunities to live, work and play within a short walk, or transit ride, from home.

Similarly, Plan It Calgary, sets a minimum target to achieve 200 people and jobs / gross hectare of land within designated Major Activity Centres and Urban Corridors, 60 people and jobs/gross hectare of land on Greenfields and a 50% intensification rate. This standard recognizes that a dense mix of residents and jobs contribute to vibrant, transit supportive communities.

The City of Pickering, through their Sustainable Development Guidelines is aiming to improve the quality, density and overall sustainability of new and existing neighbourhoods over the long term. The guidelines address a range of issues and minimum design and density standards, recognizing that a comprehensive approach is needed to successfully achieve the development of sustainable communities.

The Region of Peel reported that the majority of its municipal energy use, including electricity and natural gas consumption, falls under two program areas: Water and wastewater treatment (representing 59% of all energy consumed, as discussed in the Water Section), and buildings and facilities (representing 40%). Across the country energy is consumed, in about equal measure, by buildings, industry, and transportation. Transportation, distribution and treatment of water, building operations all impact energy use with associated greenhouse gas emissions.

Energy is a resource that transforms a community, its transportation system, its economy, its built form and its environment. Like all cities, Brampton is facing the risks associated with poor air quality, dependence on fossil fuels, rising energy costs, and climate change. These risks have environmental, economic, social and cultural impacts. Regulatory changes (such as carbon taxes), energy cost increases or interruptions in supply, and a more severe climate could have dramatic impacts on the quality of human and natural systems within Brampton.

The Region of Peel reports approximately 2,200 utility accounts (electricity, natural gas and water). With only 5% of electricity consumption generated by residential accounts, the bulk of the Region's energy consumption falls under the industrial, commercial and institutional sectors. Typical energy consuming equipment in buildings includes lighting, boilers, furnaces, chillers, air conditioners, air handlers, as well as plug-in equipment such as computers. Improvements in building energy performance have been shown to be one of the most cost effective carbon abatement strategies.

How is it measured?

Building energy intensity describes the total energy consumed within a building in equivalent kilowatt-hours per square meter of building area per year. This measurement allows for a comparison of the energy efficiency of buildings of different sizes. There are tools available for further normalizing this data to account for different uses, occupant densities, hours of operation, etc., to provide a fairer comparison between buildings providing different types of services. Energy can also be measured in terms of energy use per capita.

What initiatives have been undertaken?

The City has initiated steps to retrofit its existing corporate buildings to be more energy efficient. Initiatives include: tracking corporate energy use; auditing corporate facilities; developing facility-specific retrofit action plans; training facility operators; corporate promotion of energy efficiency standards and best practices; and monitoring outcomes.

The Region of Peel released the Rethinking Energy report, an Energy Management Plan detailing goals for energy savings through efforts such as metering, building automation and renewable energy sources. The Region itself is targeting to have all Regional buildings audited by 2011. An Energy Consumption and Greenhouse Gas Emissions Annual Report is to be released this year detailing greenhouse gas emissions audits for Regional operations.

What improvements can be made?

Development can be responsive to energy management through responsible site and building designs that consider environmental influences such as wind, solar and light resources as expressed through LEED neighbourhood and buildings design; a life cycle approach

that recognizes and plans for the long-term management of corporate buildings, facilities, structures, infrastructure, public lands, and environmental programs and activities.

Building energy consumption can be reduced by installing energy efficient mechanical and electrical equipment, and by designing new buildings to take advantage of passive heating and cooling strategies.

Metering of new and existing buildings combined with energy audits allow building owners to review the energy performance of their facilities, to determine whether they are meeting recommended energy consumption thresholds.

Renewable energy sources, such as solar and wind, can be used to generate energy without the production of greenhouse gases. Renewable energy projects can be designed to generate energy on-site. For all sectors – residential, commercial, institutional and industrial – renewable energy may be purchased as renewable energy credits (REC) through certified renewable energy providers. In addition, Ontario's Feed-in Tariff (FIT) Program, enabled through the Green Energy and Economy Act (2009), provides a financial incentive for the use of renewable energy systems.

The FIT pricing is based on the type and size of the renewable energy system; for example, solar photovoltaic systems are eligible for an incentive between $0.443/kWh to $0.802/kWh. The City can conduct a feasibility analysis on its facilities to determine which are best suited for the FIT Program. The renewable energy systems can be owned and operated by the City or by a third party through leasing of facility roof space.

Cities are about people. What often distinguishes great cities from others is a high quality of life, which includes access to clean air and water, healthy ecosystems and generous open spaces and a commitment to the stewardship of these valuable assets.

What is the imperative?

Ensuring that environmental initiatives have a direct impact on local quality of life will create a virtuous circle of improvement as these initiatives create public, political, and economic momentum. The City has a leadership role by inspiring residents and businesses to get involved and to work collaboratively with partners to implement environmental progress.

What initiatives have been undertaken?

The Brampton City Council has initiated a number of stakeholder groups to promote environmental awareness and actions, including the Brampton Environmental Planning Advisory Committee, the Clean and Green Committee, High School Green Club Council and the Mayor's Youth Team. The City's Green Education and outdoor education programs have been introduced by the Clean and Green Committee and Community Services Department to encourage teachers and students to discuss environmental issues and make changes in their behaviour to reduce their own impact on the environment. Brampton's Spring and Harvest Clean-Ups engage roughly 60,000 people each year to clean up their neighbourhood. The City has also been an active participant in Earth Hour since 2007.

The Sustainable Neighbourhood Retrofit Action Plan project (SNAP) is partnership of the TRCA, Region of Peel and the City of Brampton to create an innovative action-oriented plan to transform an existing community to urban sustainability and preparedness for climate change.

What improvements can be made?

Given Brampton's diverse community, education and stewardship, programs need to reach a wide audience. Programs that allow residents to witness environmental progress within a practical timeline and understand the effect that each individual, community and corporate decisions make can inspire long-lasting environmental activity and political and social will. The Imagine Calgary process created a forum for discussions and physical models to understand the impacts of decisions related to how the City would grow over the next 50 years.

Demonstrating innovative infrastructure such as green roofs/living walls on City facilities and monitoring the resultant conservation of water or energy use allows City staff and the community to understand the impacts, in some cases, small changes can make. Red Deer has installed water meters in the cafeteria of the City's new Civic Yards Building to allow staff to monitor the conservation of water use from building grey water reuse in their new LEED building.

Building partnerships with existing environmental stewards and establishing new partnership opportunities with businesses, institutions, and communities will be key to the implementation and achieving the goals of Brampton Grow Green. Strong existing partners are the place to start but enhancing these networks to engage Brampton's diverse community through initiatives such as a green business awards or an environmental ambassador program may advance initiatives significantly and meaningfully.

Waste

An increasing population means increased waste generation from the community and the City. The Caledon Sanitary Landfill is the only public landfill currently active in the Region of Peel. Brampton's waste is processed by the Algonquin Power Energy from Waste facility.

What is the imperative?

In 2004, the Region of Peel reported 428,742 tonnes of waste generated, or approximately 0.4 tonnes per capita, and residents delivered 1,562 tonnes of hazardous waste to Community Recycling Centres for property disposal. Waste entering landfills releases air emissions such as methane and carbon dioxide, and leachate formed by the mixing of rainwater or melting snow with the landfill eventually leaks into ground and surface waters. As the population of Brampton grows, diversion efforts will be increasingly important.

How is it measured?

Waste generation can be monitored through waste stream audits to determine per capita waste disposal as well as the variety of waste entering the waste stream. Waste diversion rates provide a gauge for the success of recycling collection and composting programs.

What initiatives have been undertaken?

The Region of Peel produced a Waste Management study providing policy recommendations for waste processing and disposal.

What improvements can be made?

Reducing waste at the source through efficient use of resources is the first and foremost means of addressing the problem of waste generation. Given the presence of industry in the City, alternative means of reducing industrial waste, such as reclaiming residual materials, should be explored.

Although data is not available for the City of Brampton, the Region of Peel as a whole generated close to 428,750 tonnes of waste in 2004, which translates into approximately 396 kg of solid waste per capita, or 1,216 kg per household. Waste diversion rates in the Region were over 45% in 2004. In the residential waste stream alone, 1,562 tonnes of hazardous waste were reported.

Brampton, as a corporation and facilities manager, can decrease its solid waste generation by focusing on City buildings, staff, and food services suppliers. This can be achieved by setting waste diversion targets, waste tracking, employee education, and green procurement policies for City operations. For example, the Town of Markham has set a target for zero waste for all Town buildings. By implementing green procurement policies and providing education to its employees, the Town achieved a 74% waste collection diversion rate in 2009, and are progressing on their way of achieving zero waste.


BRAMPTON
Welcome to the
Tropical Gardens

Chapter 8

Next Steps

The Background Report has synthesized the assessment and understanding of Brampton's current initiatives related to environmental performance and establishes a foundation for moving forward into the next phases of work.

Over the coming months the Brampton Grow Green process will focus on:

- Coordinating public consultation with the Strategic Plan Update
- Setting directions - Municipal Best Practices
- Establishing goals and benchmarks
- Determining recommendations for policies, corporate directions and for implementation actions
- Ongoing engagement with City staff and environmental stakeholders

More specifically the following phases of work will be undertaken:

Phase 3: Goals and Directions

The purpose of Phase 3 is to develop goals, objectives and benchmarks under each of the six core components of Brampton Grow Green: Air, Water, Land, Energy, People and Waste.

In Phase 2 (Chapter 5), gaps and opportunities were identified based on the snapshot of current initiatives. It was evident that, in terms of environmental performance, there are many initiatives where Brampton has had notable success. But, there are also examples where the sustainability of Brampton's operations could be significantly improved, and it is these areas, which can be considered priority areas, that will be the focus of Brampton Grow Green.

Examples of priority areas include the built environment and energy demand and each will fall within one of the six core components of the Environmental Master Plan. Goals and objectives, which will be established for each component, will identify what it is that Brampton should achieve (eg. reduced building emissions or decreased use of non-renewable sources of energy) and why it should be achieved. More specific benchmarks (eg. residential density or percent of energy from renewable sources) will be developed within each priority area that will support the goals and objectives and will allow quantifiable targets to be set.

To further this work, we will expand upon the sustainability plan best practices researched in Phase 2 (Chapter 3), and consider the types of benchmarks that other precedent municipalities have used: what specifically did they measure? This research will move us beyond Canada and we will examine leading edge cities from around the world. We will also look at new directions for policies and strategies that will ultimately create a municipal framework that demonstrates the City's commitment to the EMP's goals and objectives.

An integral component of the EMP planning process involves public consultation and we will engage with the many diverse community groups that comprise the City. Through coordinated consultation with the Strategic Plan, we will engage the public, enabling us to develop a shared understanding of sustainability rooted in a dialogue about Brampton's vision for the

Environmental Master Plan. Community and continued City input will be used to refine goals and objectives that will guide the development of targets and allow for the recommendation of specific actions needed to implement the plan, including directions for changes to policy and management strategies.

Phase 4: Benchmarks and Actions

With priorities, goals, objectives and benchmarks set, the focus of the study will shift from issues and directions to potential solutions.

Policies, strategies and benchmarks will be translated into a series of targets and core actions that will ultimately measure progress toward objectives. Targets, such as 50 residential units per hectare, are numeric objectives selected because they are both quantifiable and achievable and one or more will be selected for the established benchmarks within each of the six components: Air, Water, Land, Energy, People and Waste. Furthering the best practices research, the targets and time frames that comparable municipalities have set will be considered, as well as whether these would be either overly ambitious or too easily attained by Brampton, based on the City's current position.

Achieving these targets will require effort and a change in operations; a series of actions specifically undertaken to reach the goal. Again, the best practices research will reveal how other municipalities intend to meet their objectives, providing valuable lessons for Brampton: what partnerships have been established, what specific actions have been recommended and what strategies have been developed to overcome challenges.

In addition to ongoing work with the City Working Team and the Steering and Technical Advisory Committees, the public will be invited to review and comment on the targets and actions prior to finalization of the Plan.

Phase 5: Synthesis & Completion

The Environmental Master Plan will be a compilation of the many elements of the Brampton Grow Green process. First, the analysis included in this Background Report. Second, a Consultation Report, which will summarize the input received during interviews, focus groups, workshops and open houses and, finally, the goals, objectives, benchmarks, targets and actions established in the latter phases of the project (all informed by City staff and public engagement, analysis and best practices research). The document will also include a recommended direction for the City's Strategic and Official Plans, Growth Management Program and management strategies as well as monitoring measures, to ensure that the City's progress towards its targets is frequently assessed.

At the completion of the project, the Environmental Master Plan will be presented to Council at a public event.

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Appendices

Appendix A

City of Brampton: Document Inventory

Policy and City-wide Planning	
Core Policy Documents and By-laws	
Official Plan	2006
Brampton Six Pillars	2003
Brampton Bylaws	
Mount Pleasant Secondary Plan Recommendation Report (Area 51)	
Growth Management and Growth Plan	
Brampton Growth Management Programs	2006
Brampton's Response to Provincial Growth Plan - Natural Systems and Conservation Policy Review Discussion Paper	2009
How Should Brampton Grow? Brampton's Response to the Provincial Growth Plan	2008
Request for Comments on Brampton's Draft Growth Plan Official Plan Amendment – TCA & CVC	2009
Capacity and Forecasts	
Population and Employment Forecasts	2009
Assessment of Planned & Potential Growth in Greenfield Areas	2009
City of Brampton Employment Lands Strategy	2008
Inventory & Assessment of Intensification Opportunities	2008
Infrastructure Capacity Review of Utilities and Services within the City of Brampton	2009
Environment/Sustainability	
City of Brampton Preliminary Environmental Inventory – Initiatives, Documents, Programs and Operations	Sept 2009
BEPAC Recommendation Report	Aug 2007
City Report Environmental Report - points	2009
Acceleride Memo Environmental Benefits 20091112	2009
Green Education: Teacher Preparation Package	
EDO Green Strategy	2010

Buildings and Development of New Communities	
Subdivision Manual	2006
Development Design Guidelines	2003
Development of a Sustainable Neighbourhood Retrofit Action Plan (SNAP) for County Court, Brampton, Ontario (Phases 1 and 2)	Aug 2009
Draft Buildings and Property Management: Departmental Overview	2009
Infrastructure	
Transportation and Transit	
Transportation and Transit Master Plan	2004
Transportation and Transit Master Plan Sustainable Update	2009
BRT Strategic Implementation Plan	2007
Sandalwood Facility Stats	2009
Transportation and Transit Master Plan (TTMP) Sustainable Update for the City of Brampton – Air Quality Strategic Direction	May 2009
Stormwater Management	
Brampton SWM Master Plan - Draft Report	Oct 2008
Brampton SWM Master Plan – Presentation	Mar 2009
City of Brampton Stormwater Retrofit Study	Jan 2000
Brampton SWM Master Plan – Facilities (Existing and Proposed SWM Ponds in a Chart)	May 2009
Landscapes and Open Spaces	
Pathways	
Pathways Master Plan	2002
Revised Pathways Routing plan	2006
Parks, Planting and Landscape Design	
City of Brampton Plant Chart	Apr 2009
Landscape Development Guidelines	
Parks Culture and Recreation Master Plan	2008
Buffer Flower Planting Specifications and Guidelines	Jul 2006
Lake Management	
Lake Management Study - Brampton Lakes Assessment and Management Study: Phase 1 Report Background Information and GAP Analysis	Mar 2005
Brampton Lakes Citywide Lake Assessment-Management Study	Dec 2005
Interim Report – City wide Lake Management and Monitoring Report	Jun 2006

Woodlots	
Woodlot Development Guidelines	Nov 2002
Woodlot Data combined	
Woodlots Development Guidelines	1992
Flower City	
Flower City Strategy	2003
Flower City Strategy Implementation Framework	2003
Flower City Workshop Outcomes	May 2009
Conservation Authorities	
Humber Watershed Plan	2008
Claireville Conservation Area Management Plan	2009
TRCA's Remedial Action Plan	2010
Credit River Water Management Strategy	2009
Greening the bottom-line in the Pearson Eco Business Zone	On-going
Partners in Project Green - A Pearson Eco Business Zone Strategy	
Region of Peel	
Region of Peel Timelines	2009
Region of Peel – List of Initiatives from Trans. And Planning Division	2009
Rethinking Energy	2008
Region of Peel – List of Energy Initiatives	2009
Long Term Waste Resource Management Strategy	2004
Climate Change Strategy for the Geographic Region of Peel	2010
Marketing Materials	
Brampton- Sharing our Diversity	Aug 2008

Appendix B

Consultation Events: Purpose and Structure

Event	Purpose and Structure
Internal Stakeholder Interviews November 4, 2009	Early engagement with City, Region and Conservation Authority staff, through a series of small group interviews, helped to develop a more complete picture of Brampton, allowing the Consultant Team to gain a fuller understanding of current initiatives and critical environmental issues facing Brampton. The interviews, in combination with the focus groups that occurred as part of this Phase, ensured that a broad range of Municipal and Regional employees contributed their insight to the Brampton Grow Green project. Over the course of one day, approximately 30 people were interviewed in two separate sessions.
Growth Management Focus Group November 27, 2009	Following a review of the preliminary findings of Brampton's Growth Plan conformity exercise, approximately 35 Managers and Directors from the City, Region and Conservation Authorities were asked to further contribute to Brampton Grow Green by attending a ½ day focus group to identify the sustainability implications and challenges of the scale and distribution of proposed development, the phasing of growth and the provision of servicing infrastructure. Participants were organized into four groups by the following themes: • Creating Compact, Vibrant and Complete Communities • Supporting a Strong and Competitive Economy • Optimizing Infrastructure to Support Growth • Protecting Natural Resources Discussions were facilitated by targeted questions on key initiatives, opportunities and challenges.
City Operations Focus Group December 17, 2009	To fully understand how Brampton provides its services, it was critical to develop a comprehensive inventory of the sustainability of municipal programs and operations through a City Operations focus group. About 35 City, Region and Conservation Authority senior staff were brought together for a ½ day focus group discussion to explore the opportunities and challenges in operationalizing City initiatives, projects and services in a manner that will enhance the environmental performance of Brampton. Participants were organized into four groups by the following themes: Movement, Health, Community and Employment. Conversations explored the linkages between city operations and environmental impacts and were guided by questions that focused on identifying initiatives that advance the environmental performance of City services, and the related challenges and potential strategies to overcome these challenges.

Event	Purpose and Structure
External Stakeholder Interviews February and May 2010	Two sets of small group interviews were held with external stakeholders to identify strategic initiatives being undertaken by contractors and outside agencies including, business associations, environmental groups, and private vendors.
Mayor's Youth Team Meeting June 28, 2010	A discussion with the Mayor's Youth Team explored student perspectives on current initiatives and critical environmental issues facing Brampton, as well as longer term aspirations for the City's future.
Youth Workshop Spring 2011	This event will bring together high school students to inform participants about Brampton sustainability initiatives, explore Brampton's goals, objectives and priorities for sustainable action and, drawing from the best practices research, introduce innovative approaches being undertaken elsewhere. The workshop will be supported by creative and interactive graphic exercises, break-out group discussions and summary presentations.
Mayor's Town Hall Spring 2011	A Town Hall meeting will be held in June as an opportunity to discuss the development of the EMP. Further details of the structure and content of this event are currently being developed by City staff.
Community Workshop Spring 2011	Through small group discussions and brief presentations we will explore a vision for Brampton, proposed approaches to achieve goals and potential benchmarks to measure success. An afternoon session will target key stakeholders (including residents, representatives from community and environmental groups, social agencies, business groups, the development industry, Councillors, members of the Technical Advisory, members of BEPAC and key staff) followed by an evening session open to the general public. Key outcomes will include identifying gaps in the City approach to sustainability, building support for the City's proposed approach to sustainability and educating residents and stakeholders on the City's current sustainability successes.

Appendix C

Stakeholder Interviews: Departments Interviewed

City Brampton

Buildings and Property Management

Community Services

Corporate Services

Economic Development and Communications

Finance

Planning, Design and Development

Works and Transportation

Region of Peel

Community Planning

Transportation Planning

Waste Management

Environmental Health

Energy

Conservation Authorities

Credit Valley Conservation

Toronto and Regional Conservation Authority

Appendix D

Sustainable Planning & Growth Management Workshop Summary

Friday, November 27th 2009

The Growth Management focus group was attended by more than 35 staff, managers and directors from the City of Brampton, Region of Peel and Conservation Authorities. Participants contributed to Brampton Grow Green by identifying sustainability implications and challenges as they relate to Growth Management. Discussions were facilitated by targeted questions on key initiatives, opportunities and challenges.

Participants were organized into four groups by the following themes:

- Creating Compact, Vibrant and Complete Communities
- Supporting a Strong and Competitive Economy
- Optimizing Infrastructure to Support Growth
- Protecting Natural Resources

Many initiatives are currently underway in Brampton that are being led by individuals, departments or partnerships under municipal, regional and conservation authority direction. The following is a summary of the initiatives and related opportunities and challenges discussed during the break-out sessions:

Current Initiatives

- Sustainable Neighbourhood Retrofit Action Plan
- Integrated watershed monitoring program (IWMP)
- Sub-watershed studies
- Greenland securement strategy
- Lake Ontario Biodiversity Strategy
- Stormwater Management Plan and Retrofit Study
- 3R's Program
- Valley re-naturalization Program
- Partners in Project Green: A Pearson Eco-Business Zone Strategy
- Transportation and Transit Master Plan (TTMP)
- Brampton Rapid Transit (BRT) /Züm
- Pathways Master Plan
- Green Economic Development Strategy
- Transportation Demand Model (TDM)
- Smart Commute Caledon-Brampton: Employee Trip Reduction Program
- Higher Order Transit Light Rail (Metrolinx)
- Fletcher's Creek Monitoring Program
- West Humber Watershed Plan
- Urban Forestry Program
- Mount Pleasant Secondary Plan
- Hurontario Main Street Study

Opportunities

- Incorporate Low-impact Development and Alternative Design Standards into the planning for new and existing communities, much as they have been applied to the Mount Pleasant Secondary Plan and Central Area Plan
- Strengthen, preserve and protect Brampton's natural heritage system
- Promote environmental awareness through educational programs and campaigns
- Support lot level strategies to promote water conservation, rainwater harvesting and grey water recycling
- Encourage brownfield redevelopment, retrofit and adaptive reuse programs
- Establish interconnected communities, urban spaces and green systems
- Implement an integrated waste management program
- Promote live-work units to improve walkability within the city
- Explore partnerships with Sheridan College
- Integrate active transportation into the transportation network
- Consider District Energy and Geo-thermal systems to decrease energy usage and reliance on non-renewable sources of energy
- Create an energy plan for the central area
- Apply a systems approach to the protection of natural areas
- Consider urban agricultural as a heritage feature
- Explore higher densities and density bonusing
- Encourage green infrastructure, technology and building design
- Naturalize existing park space

Challenges

- Influencing developers to design complete communities that preserve ecological and natural features
- Developing a policy framework to regulate the protection of natural features during the development and construction phase
- Implementing funding to promote environmental initiatives
- Balancing the protection of natural areas while ensuring walkable/interconnected communities; natural areas tend to impede movement between and within communities and limit urban connectivity
- Limited capital funds for hazard lands preservation and on-going maintenance
- Implementing local food production
- Lack of environmentally sustainable design integrated within large employment/industrial areas
- Natural cover is currently too low to foster bio-diversity and opportunities to expand are limited

Appendix E

City Operations Workshop Summary

Thursday, December 17th 2009

Approximately 35 City, Region and Conservation Authority staff attended a ½ day focus group discussion to explore the successes, challenges and strategies in operationalizing City initiatives, projects and services in a manner that will enhance the environmental performance of Brampton. Participants were organized into four groups by the following themes:

- Movement
- Health
- Community
- Employment

Conversations explored the linkages between city operations and environmental impacts and were guided by questions that focused on identifying initiatives that advance the environmental performance of City services, and potential strategies to overcome challenges. The following is a summary of the key themes discussed:

Current Initiatives

- Watershed Management
- Urban Forestry Study
- Parks, Culture and Recreation Master Plan
- Green Fleet Plan
- Valley renaturalization program
- Fleet 'right-sizing'
- Pathways Master Plan
- Flower City Strategy
- Biodiesel fuel in fleet vehicles and City buses
- Active Transportation Plan
- Transportation Demand Management
- Salt Management Plan
- Züm
- Bike and Ride Program
- Mount Pleasant Secondary Plan
- Sustainable Neighbourhood Retrofit Action Plan
- Stormwater Management Plan and Retrofit Study
- Wetland and stream restoration
- Cultural outreach program

Successes

- Watertershed management strategies including new floodplain mapping, channel realignment and restoration
- Woodlot Preservation Bylaw
- Greening of city facilities (e.g. Sandalwood facility)
- Community outreach programs in place (e.g. Youth Ambassador Program)
- Redesign of Chinguacousy Park for environmental improvement
- Valley land vegetation (16 hectares per year)
- Fleet - Reducing fuel consumption and emissions
- Designing complete streets
- Active Safe Routes to School
- Anti-idling and no drive-thru permitted for city vehicles
- Pathway & natural heritage interface
- City stewardship
- Application of Alternative Design Standards
- Federal/Provincial funding for Bus Rapid Transit
- Partnerships with Conservation Authorities
- Mount Pleasant Secondary Plan - Higher density; Low Impact Development; Accommodating natural areas & development; Housing variety; Transit oriented development
- Leadership in Energy and Environmental Design (LEED) (Library and Fire Station)

- Peel Children's Water Festival
- Attracting and engaging green business
- Land allocated for prestige industries
- Breadth of existing industry
- Staffing environmental programs
- Private employers providing buses for employees
- Undertaking Environmental Master Plan to raise awareness

Challenges

- Watershed monitoring, maintenance and inspections
- Piecemeal initiatives
- Environmental awareness and education to broader community
- Encouraging developers to achieve high environmental performance
- Establishing an energy management strategy
- Education and awareness amongst Council and residents
- Erosion and sediment control
- Lake maintenance is not set up for monitoring and financial resources are limited
- Stormwater management pond monitoring programs
- Limited financial resources
- Competing interests in road and infrastructure design
- Development charges pay for new development not improvements in existing communities
- Maintaining and financing infrastructure in older communities
- Lack of communication between departments
- Invasive species control
- Securing lands through policy
- Functional systems and balancing objectives – wildlife; pathways; addressing climate change; creating connections between natural systems and developed areas
- Presto Card – aligning regional and municipal transit strategies
- Retrofitting transit terminals
- Establishing and promoting mixed-use office space and a diversity of land uses in employment lands
- New graduates going to private sector rather than public sector
- Recreational centres are difficult to maintain

Strategies

- System-based approached to watershed management
- On-going awareness and educational campaigns to promote residential 'greening'
- Further reducing carbon footprint
- "Made in Canada" approach
- Consistency of bylaw application, policies and standards
- Studies to assign value to existing trees
- Working with large employers for transit solutions
- Reorganization of staff to environmental performance jobs
- Satellite university/college campus or help Sheridan to develop environmental programs
- Working with young leaders to promote environmental sustainability
- Looking to other cities for best practices in environmental performance
- Rebalance priority/standards beyond Development Charges towards local improvement charges
- Direction from senior management and Council to promote high environmental performance
- Implementing internal corporate efficiency through a City Green Team

Appendix F

Stakeholder Interviews:

November 4th, 2009

Early engagement with City, Region and Conservation Authority staff, through a series of small group interviews, helped to develop a more complete picture of Brampton, allowing the Consultant Team to gain a fuller understanding of current initiatives and critical environmental issues facing Brampton. The interviews ensured that a broad range of Municipal and Regional employees contributed their insight to the Brampton Grow Green project. Over the course of one day, approximately 30 people were interviewed in two separate sessions. The following summary describes the questions asked and the most common feedback heard.

What are the top 3 sustainable initiatives taking place in the City of Brampton?

- Subwatershed Studies
- Valley Renaturalization Program
- Transit and Transportation Master Plan
- Stormwater Management Plan
- Sustainable Neighbouhood Action Plan (SNAP)
- Alternative Design Guidelines
- Lake Assessment Report
- Environmental Bylaws
- Bio-diesel fuel in City fleet and transit vehicles
- City Fleet Vehicles: Anti-idling; Anti-drive-thru policy
- Reviewing refuse bylaw to include stronger policies with regards to illegal dumping
- Review and reassessment of Design Guidelines, Park Dedication Bylaw and Block Plan review
- Proposal to promote By-law Officers 'on bikes'
- Cyril Clark Library Branch LEED redevelopment
- Parks and Culture Master Plan
- Green Fleet Plan and 'Right-sizing' vehicles Program
- Züm: Bus Rapid Transit
- Smart Bus Project
- Fleet software information system records detailed information including fuel management, repairs and maintenance
- Green cleaning products and materials
- Limited municipal paper shredding (to encourage recycling)
- Regional organic waste pick-up
- LEED principles within city facilities
- New fire station headquarters is aiming for Platinum LEED standards
- LED and energy efficient lighting systems within city facilities
- Growth Plan Conformity studies and exercises
- Building Energy Audits
- Energy efficient technology (photocopiers, computers, etc.)
- Brampton Portal
- Eco-schools certification program
- Adopt a park/pathway/trail program
- Play clean
- Gimme 5
- Brampton Clean City High School Program
- Urban Forestry Study
- Clean Air Council Report
- Chinguacousy Park redevelopment
- Parks Hierarchy Document
- Salt Management Plan

- Leaf waste vacuum program
- Spring and Harvest Clean-up
- Sandalwood Facility
- Low-VOC or water-borne paints in traffic markings
- Buildings and Property Management - Energy Management Team and green procurement strategies
- 150 monitoring stations within the Credit Valley watershed
- Watershed Plans
- Partners in Project Green – Pearson Eco-Business Plan
- Region of Peel/ TRCA Climate Strategic Plan
- Region of Peel Health Assessment Index tool
- Region of Peel Urban Forestry Canopy Study
- Region of Peel Active Transportation Study
- Region of Peel Transportation demand management
- Brampton-Caledon Smart Commute
- Region of Peel Streetscaping Strategy
- Region of Peel Energy Management 2007
- TEEM (Terrestrial Ecosystem Enhancement Model) (CVC)
- Natural Areas Inventory program (CVC)
- Invasive Species Program (CVC)
- Greenland Securement Strategy (CVC)
- Integrated watershed management program (CVC)
- Low-impact development program (CVC)
- Watershed planning (CVC)
- Regional Monitoring Program (TRCA)

What are Brampton's key challenges and issues related to environmental sustainability?

- Financial/Budget constraints
- Conflicting objectives and lack of communication across departments
- Growth pressures make it difficult to prioritize sustainability
- Upkeep and maintenance of stormwater management ponds – physically and financially cumbersome
- Lake Assessment Report was put on hold due to lack of funding
- Infill development downtown is a challenge because there is no open space
- Traffic congestion during peak rush hour times
- Lack of corporate policies related to sustainability
- Air quality impacts from diesel trucks and Airport air emissions
- Brampton lacks base information regarding its natural heritage
- Infrastructure deficit – gaining infrastructure with no fiscal resource to maintain and/or replace
- Heart Lake – poor water quality and safety issues
- Gearing community engagement for all ages
- Removal of large accumulation of street sweeping debris
- Lack of policy for environmentally sensitive lands
- Degradation of Fletcher's Creek
- Terrestrial Natural Heritage Strategy – so far unsuccessful with getting it into Brampton
- Channel structure that runs east of the downtown
- Knowing what other departments are doing is a challenge

What are some of the opportunities available from Brampton to achieve a high degree of environmental performance?

- Establishing municipal-wide environmental standards
- Linking pathways through to the Toronto and Mississauga systems
- Creating a popular destination in Brampton - an attraction that will help turn the city's image around
- Improved transit with links to Mississauga and Toronto
- Transfer some city operations to bicycles rather than vehicles (i.e. bylaw officers, mail deliveries)
- Developing the downtown core to attract people
- Retrofit the Alder Leigh Historic House
- Merge environmental/sustainable education with theatre and arts
- Document all city-wide environmental initiatives
- Green Roofs
- Green standards ingrained in the Brampton city culture and endorsed by Council
- Smart meters in City buildings
- Connected open space strategy
- Conservation Area Program in Brampton
- Save and protect natural heritage
- Reduce paper usage and promote double sided printing and electronic documents
- More community gardens
- Improving flow of information and communication between Planning and Parks departments
- Implementing a composting, landscape clippings and park compost waste collection service
- Environmental initiatives related to road and sidewalk resurfacing
- Brownfield clean-up and re-use for city owned land
- Develop a City-wide Green Procurement Plan
- Acquisition of environmentally sensitive lands
- Pollution prevention through education and awareness programs
- Sustainable communities (driven by climate change, large scale community retrofits, green buildings, energy conservation)
- Ensure a 10 metre protection buffer from natural areas and streams
- Transition area between Brampton and Caledon
- Erosion control program
- More implementation of low-impact design

Appendix G

External Stakeholder Interviews:

February 23rd and May 27, 2010

A series of external Stakeholder interviews were held to understand the contributions of private, non-profit, and public sector entities to sustainable initiatives in Brampton, whether as an environmental group, regional agency or vendor offering services to the City. The interviews included representatives from the Brampton Board of Trade; Region of Peel Health; Friends of Clairville; Sierra Club; Etobicoke Mimico Watershed; Credit River Alliance; Carmichael Engineering; BP Landscaping; Bild; Economic Development; Peel District School Boards (Public and French); and, Hydro One Brampton. Over the course of two sessions, approximately 20 people were interviewed. The following summary describes the questions asked and the most common feedback heard.

1. What are the top 3 sustainable initiatives currently taking place in Brampton that enhance or encourage the environmental impact of your organization?

- Pathways Master Plan
- Transportation Master Plan
- Partners in Project Green – Pearson Eco-Business Zone
- Sustainable Neighbourhood Action Plan (SNAP)
- Buffer planting and construction of 120 metres of bio-swale for improved stormwater management (Etobicoke Mimico Coalition)
- Peel Children's Water Festival
- Eco-business opportunities
- Channel renaturalization
- Heart Lake Master Plan
- Medicine Wheel Garden with Peel Aboriginal Network
- Communities in Bloom
- Low Impact Development initiatives
- Greening watersheds
- Maple Lodge Farms employee shuttle bus program
- Brampton-Caledon Smart Commute
- Hurontario Corridor Study
- Hospital redevelopment
- Flower City strategy
- Organic waste pick-up
- General promotion of health and planning
- Crime Prevention through Environmental Design

2. What are Brampton's key challenges/issues related to environmental sustainability?

- Trails and pathways resulting in dead-end connections
- Creating better access to be able to walk and bike to the bus stop
- Environmental change is difficult in older, developed communities
- Queen Street is traffic heavy and difficult to cross as a pedestrian - Need a bridge across Queen Street
- Street safety - People won't walk if they perceive it to be unsafe
- Transportation and Transit Connections - Need to improve north-south transit connections as well as connective routes to Mississauga, Toronto and Richmond Hill
- Lack of pedestrian-oriented shopping/retail

- More parks, active uses and open space
- Big box approach to recreational facilities
- Municipal decisions are made from a business perspective (construction and maintenance costs) but should consider other factors (environment, sustainability, etc.)
- Urban form issues – legacy of low-density built form
- Suburbanization of the watersheds
- Loss of agricultural land, habitat and biodiversity
- City is built for cars with implications for traffic, water and air quality and human health/fitness
- Integration of environmental sustainability objectives and actions into municipal practices
- Water Quality and Climate change
- Health and integrity of the city's 3 river systems and their connecting natural features
- Disconnect between Provincial and Municipal policies with regards to Downtown intensification
- Limited fiscal resources for energy efficient facility upgrades

3. In 20 years time, what does Brampton need to do in order to be a leader in environmental sustainability?

- Establish a clear commitment to the protection of the Natural Heritage System; restoring and renaturalizing environmental features and incorporate the Natural Heritage Systems approach in all development going forward
- Shift in thinking away from big box development - City needs to be developed on a people friendly scale rather than a big box scale.
- Narrower roads/sidewalks and more connections
- Retrofitting existing, low-density communities
- Road standards to include bike lanes
- Create an environmental vision for each community
- Exercise equipment in parks and ensure that they are accessible to residents
- More community gardens
- Intensification first, only then proceed to Greenfields
- New development to be sustainable, compact, low impact, complete communities.
- Protect and strengthen natural systems
- Phase out existing incompatible uses and protect valleylands from new intrusive uses
- Emphasis on transit, bikes and pedestrians
- Implement the Stormwater pond strategy
- Develop a sustainability mission statement of principles for the City and incorporate it into development policies and practices
- Develop a strong Environmental Master Plan with an integrated set of guiding principles to be applied at the first level of all city planning
- Protect wildlife corridors and habitats
- Protect and promote healthy and sustainable watersheds as a means of mitigating the impacts of climate change
- Make the downtown better for cyclists and pedestrians
- Initiate an Environmental Advisory Committee
- Strengthen policy to preserve and protect the Claireville conservation area
- Avoid silo approach to environmental planning
- More passive recreational spaces that leaves the natural environment untouched; urban forests should be designated as Natural Areas
- Identify areas within Brampton as part of the Greenbelt Review
- Improve sustainable salt management practices using sustainable beet juice

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- Organic waste pick-up
- General promotion of health and planning
- Crime Prevention through Environmental Design
- BILD is an important partner in Brampton
- BILD is progressive and always looking for innovative technologies and solutions
- 20% of the landscape is dedicated to NHS in Northwest Brampton – more efficient and balanced
- The development community is doing more than developing and – they are planning communities
- Fletcher's meadow is a good example of something that is performing well in Brampton – well connected and corridors for wildlife
- Foundation Drain Collection (FDC) – separate piping to divert water and mimic ground water
- Transportation component is well integrated in the new Mount Pleasant community
- There are more wetlands and forest cover in Mount Pleasant
- EDO sends out a questionnaire to figure out what each business. Opportunity exists to change the questionnaire to ask specific questions regarding sustainability and recycling, etc.
- Partners in project green are doing a really good job and developing some programs however there needs to be some work on communicating and marketing their success, even if it is small scale projects
- The Downtown development corporation employs a marketing strategy to attract new business that will diversify the economic base and ensure future job opportunities
- The EcoSchools program has 4 – pillars – ecological literacy, energy conservation, waste minimization and school ground greening.
- Program is mostly driven by students, champion teachers and principals.
- Eco schools started in Toronto in 2002. They allowed other municipalities to use their template
- The EcoSchool program tends to overlap with the 3R's program
- Recently underwent an audit by the Ministry of the Environment resulting in a high average in performance.
- The board has an environmental policy that came out during the spring of last year. A Broad based framework.
- There is an EcoSchools steering committee which Tracy chairs – builds awareness and knowledge and allows a communication platform across departments
- Last year was the first year for EcoSchools with 17

schools certified. This year they are hoping to have 48 schools certified. There are a total of 250 schools.

- Toronto District School Board is an example of a best in class school board in terms of the environment. With over 500 schools, more than half are certified.
- Each school in the Region of Peel operates its serves on a centralized system (water, hydro, etc) – they track this data
- There is an annual school board conference in Toronto – last year's conference was focused on the environment and 'greening'
- Some schools have taken on their own anti-idling campaign. Every Caledon school has a sign to inform of an anti-idling zones.
- Litter-less lunch program
- Walking school bus program – with select ECOschools
- Heart Lake is implementing solar panels on the roof
- Geo-thermal will be implemented for one of the schools in Brampton
- Hydro PCB transformers being replaced – cut off dates 1985 an older
- Hydro One Brampton has begun using our Hybrid Aerial bucket truck. This truck is designed so that the hydraulics will operate of battery power rather than the diesel engine thus reducing noise and pollution.
- Hydro One Brampton has three hybrid SUV's, two pickups with an anti-idling feature as well as three dual fuel pickups in service.
- Hydro One Brampton runs the Multi-Family Energy Efficiency Retrofit program (MEER). This affects high-rise apartments and works similar to the ERIP. Five apartment buildings have taken advantage to date.
- Hydro One Brampton Energy Services Department provides an electrical data usage profiling service for its larger customers. The city has 20 of its larger accounts being profiled. This graphical information is a key tool in identification of what can be done to shave load. Our Energy Services Department also provided training to Facility Operators on how to use this information to run their facilities in an energy efficient manner.
- Hydro One Brampton is now specifying an environmentally friendly transformer fluid for high risk locations. This will reduce impacts to the environment if one of the transformers ruptured.
- The Hydro One Brampton facility separates waste to enable recycling to occur.
- The Hydro One Brampton facility lighting was completely updated in 2008 to energy efficient lighting and currently has two solar installations at our Sandalwood facility (20Kw & 1.5Kw).
- In 2010 Hydro One Brampton will install a 3 Kw vertical axis wind turbine at Sandalwood.
- Hydro One runs the OPA appliance retirement program in the City of Brampton. We typically have 1200 customers a year participating in taking old equipment such as fridges out of service. They also run the OPA peak saver thermostat program in Brampton (200 will be completed over 2010) and the Power Blitz program for small commercial customers where we perform retrofit lighting up to $1000 per location. (We have completed 4000 out of 8000 customers to date).
- Hydro One runs the Electricity Retrofit Incentive Program (ERIP). This is for Industrial and Commercial customers who reduce demand. They Receive $400 for every Kilowatt of Lighting load they reduce. They also can receive $800 for every Kilowatt for non-lighting load reductions. We have reduced by 2 MegaWatts of load from last year

2. What are Brampton's key challenges/issues related to environmental sustainability?

- Trails and pathways resulting in dead-end connections
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- Lack of pedestrian-oriented shopping/retail
- More parks, active uses and open space
- Big box approach to recreational facilities
- Municipal decisions are made from a business perspective (construction and maintenance costs) but should consider other factors (environment, sustainability, etc.)
- Urban form issues – legacy of low-density built form
- Suburbanization of the watersheds
- Loss of agricultural land, habitat and biodiversity
- City is built for cars with implications for traffic, water and air quality and human health/fitness
- Integration of environmental sustainability objectives and actions into municipal practices
- Water Quality and Climate change
- Health and integrity of the city's 3 river systems and their connecting natural features
- Disconnect between Provincial and Municipal policies with regards to Downtown intensification
- Limited fiscal resources for energy efficient facility upgrades
- It is common for BILD come across regulatory and policy-based barriers and therefore they sometimes steer away from being guinea pigs and trying new innovative solutions
- Brampton can foster innovation by breaking down regulatory barriers (i.e. streamlining approvals)
- Brampton is at a good point in its growth to integrate environmental sustainability
- Brampton has very strong leadership, specifically in the Planning department – they know what they want and work to achieve it
- Work towards ecosystem evaluations (groundwater recharge, woodlands, etc.)
- Brampton has many assets and its time to think about the value of those assets
- Regulations discourage developers from being innovative
- Animal diseases are going to eventually become a more important factor in planning open spaces and Natural heritage systems
- How can you add to the City's inventory of public space
- Opportunity to implement the first fresh water reserves for endangered Redside Dace – this will help to raise awareness of what Brampton is doing to preserve endangered species
- Recent examples of score cards – evaluate performance on an A to D grade based on environmental indicators. They are fine but the ranking is somewhat opaque. It needs to be clear of what you are measuring. It shouldn't be so advanced that people can't understand.
- We are really lucky that TRCA and project in partners green have been important elements in creating awareness. It takes a long time to get the word out there.
- It is important to open up reports/policy to the community to obtain public opinion and input.
- Brampton is on the lookout for attracting green

industries. We are on the hunt and they haven't found the exact answer just yet (on how to attract them).

- We need to understand how we can get higher density residential, with value add employment with the market realities right now. What is the future of warehouses operation? What does it look like?
- Industries and Business are still trying to look for ways to be greener. They may be getting bigger but looking at other ways to be greener – scheduling deliveries during off-peak hours, LED lighting, adopting green strategies, etc.
- We haven't found out what all the businesses are doing within their operation to be greener. Once we get more information of what each business is doing then you'll have a better idea of what the themes are and you can market those strategies.
- Most businesses are aware that there is an environmental element that they should incorporate into their business.
- Gathering the information specific to private businesses is one of the biggest challenges for the EDO department.
- It would be beneficial to have something specific and innovative for Brampton to market the city to business and industries.
- Priority for the environment is growing - students and teachers are keen about green initiatives.
- They find that the EcoSchool program excels when there is a champion for the program but there is a high employee turnover rate which often disrupts the momentum
- Almost 70% of energy consumption comes from lighting in schools
- There are no specific targets or environmental design standards in schools, however they are implementing environmentally conscious features such as energy efficient lighting, green cleaning products, automatic flush valves, etc.
- There is no specified green procurement strategy however their procurement tenders often stipulate a requirement for recycling
- Learning gardens are becoming more popular in schools
- Some schools choose not to join the EcoSchools program because there are so many environmental initiatives that they feel they don't need something else and often times It requires a champion
- The region of peel cannot pick up organics from schools, condos, apartments because they are at capacity at the moment. It is not in the schools mandate to maintain organics pickup.
- Hydro One Brampton Energy Services Department performs high level energy audits on request, attends community events promoting energy efficiency and holds periodic workshops for businesses on energy conservation strategies.

3. In 20 years time, what does Brampton need to do in order to be a leader in environmental sustainability?

- Establish a clear commitment to the protection of the Natural Heritage System; restoring and renaturalizing environmental features and incorporate the Natural Heritage Systems approach in all development going forward
- Shift in thinking away from big box development - City needs to be developed on a people friendly scale rather than a big box scale.

- Narrower roads/sidewalks and more connections
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- More passive recreational spaces that leaves the natural environment untouched; urban forests should be designated as Natural Areas
- Identify areas within Brampton as part of the Greenbelt Review
- Improve sustainable salt management practices using sustainable beet juice
- Brampton can become an ideal pilot project to showcase environmental sustainability
- Outreach, education and awareness is key – we should be putting more emphasis on the social outreach aspect to connect the City/Residents to the environment
- There is an opportunity to develop and tap into sustainable industries
- We should make an effort to understand how all cultures understand the environment
- Brampton should be the flower city that blooms in all different ways
- There should be incentives to get the development industries' products to the market at a faster pace
- Important to talk to the mental health community in Brampton – opportunity for a well-being centre: a place that connects the city and celebrates social and environmental volunteerism
- Brampton has the opportunity to be different, tangible, intelligent in growth, cultural activities, etc.
- It would be great to have a feature to attract business to Brampton i.e. working with business to reduce water consumption
- We view green economic development as a driver that will shape the future economy. It is now going to be a necessary element in the economic industry. We will now have to ask: Does it meet the test in achieving environmental sustainability? Does it address the triple bottom line?

Appendix H

Mayor's Youth Team Meeting:
June 28, 2010

A meeting was held with the Mayor's Youth Team to explore the perspectives of Brampton's younger residents: their awareness of current initiatives and challenges and their priorities for the future. Approximately 15 students attended the meeting. A more comprehensive youth workshop with a more specific focus on the Environmental Master Plan will be undertaken in 2011. The following summary describes the questions asked and the most common feedback heard.

What are the top 3 sustainable initiatives currently taking place in Brampton that enhance or encourage the environmental performance of your community?

- Water Smart Peel
- Rebates for new for high efficiency appliances
- School light bulb replacement program (students bring home energy efficient lighting and replace their light bulbs to reduce energy consumption)
- Hydro One Brampton offers a rates program to promote energy usage at off peak hours
- Schools recycle twice a week
- Brampton Centennial Green Leaf Program: fall and spring clean up
- Clean City Youth Ambassadors cleaned up the City every Saturday, although the program has been replaced by the Regional High School Green Club
- Brampton Centennial Community Garden (located adjacent to the Kiwanis Community Centre)

What are Brampton's key challenges and issues related to environmental sustainability?

- Too much development occurring around parkland (i.e. Eldorado Park, Chingacousy Park)
- Developers should be required to preserve and maintain woodlots adjacent to their developments
- Growth should be focused within downtown core of Brampton
- Commercial uses are too far from residential uses
- Light rail transit should be implemented along main roads; improve transit on Queen Street and Main Street to accommodate new growth
- Increase bicycle parking and provide more facilities to encourage cycling (pathways, safe bike lanes); Rutherford road has a bike lane, however it is unsafe to travel on
- Unnecessary use of lighting (i.e. School lights are on all the time throughout the summer and evenings)

In 20 years time, what does Brampton need to do in order to be a leader in environmental sustainability?

- Provide covered recycling bins to prevent scattering of garbage
- Implement a City Wide Bicycle Program resource, allowing users to view bike path system, safe routes,
- Create an Education and Awareness campaign for residents: how to compost, recycle, reuse, etc. through pamphlet and visual materials
- Provide rebates or reduce rates for Brampton Transit to encourage ridership
- Encourage and integrate environmentally friendly design within the planning department: developers should be required to implement sustainable design in order to proceed with development
- Develop mixed use areas: integrate commercial with residential
- Improve pedestrian friendly access and movement throughout the City
- Build more parks like Gage park
- Build up, not out (more condo's and apartment buildings)
- Beautify the City through street art and benches

Appendix I

Environmental Initiatives

Environmental Initiatives

The following charts provide a summary of Brampton Grow Green's review of current environmental initiatives underway within the City of Brampton. Specific initiatives have been categorized according to their relationship to the Six Pillars – a familiar and approved policy framework - identified in the Brampton Strategic Plan.

Pillar 1:
Modern Transportation Systems

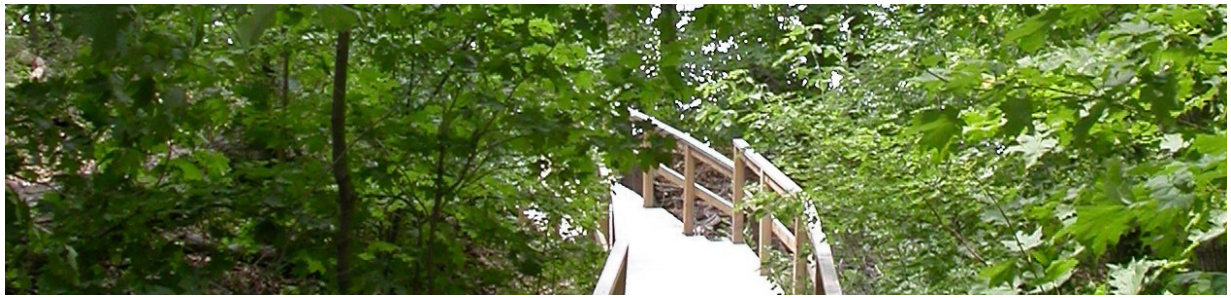
Pillar 2:
Managing Growth

Pillar 3:
Protecting our Environment

Pillar 4:
A Dynamic & Prosperous Economy

Pillar 5:
Community Lifestyle

Pillar 6:
Excellence in Local Government



Based on a comprehensive review, the following table identifies the successes associated with some of the environmental initiatives of the City of Brampton and its conservation partners. These initiatives range from small scale projects that raise environmental awareness, moderate level activities that advance environmental performance, and large scale endeavours that are well ahead of other municipalities in achieving progress to advance the long-term sustainability of the City. Each initiative represents a program, incentive, partnership, activity, technology or campaign that contributes, supports, and/or complements Brampton's general environmental performance; conservation and enhancement of the City's natural resources; health, quality of life and livability of the city; and long-term environmental sustainability.

Initiatives that have a direct and measurable impact on Brampton's environmental performance have been highlighted green to indicate its contribution to advancing the long-term sustainability of the City. Many of these highlighted initiatives can be considered as leading edge best practices, achieving tangible results that are successfully elevating Brampton's environmental performance. It should be noted, that in the next phases of the EMP, the City's current initiatives and programs will be reviewed in the context of best practices for benchmarks, targets and actions. In reviewing the City's current programs, the EMP will consider how identified targets can be addressed within a precedent time frame to achieve better environmental performance.

Initiatives have been organized by municipal structuring element, such as economy or transportation, which relates to Brampton's Six Pillars and also reflects the City's general areas of responsibility. As the EMP progresses, priority initiatives will be categorized with respect to their environmental benefit, such as air, water, energy, land, waste or people. This shift will facilitate measurement of the initiative's success on specific aspects of environmental performance, such as improving air quality or decreasing energy usage.

Pillar 1:

Modern Transportation Systems

The first pillar of the strategic plan aims to develop an efficient transportation network that is both convenient and safe for the residents of Brampton. It must also provide a system for moving people and goods within Brampton's core areas as well as beyond the municipal corridor to improve links to adjacent municipalities and the Greater Toronto Area. Establishment of a balanced movement network will ultimately reduce the reliance on single-occupancy vehicles thereby reducing harmful greenhouse gas emissions and supporting the promotion of a healthy and active lifestyle for Brampton residents.

Initiative	Key Lead	Successes
Transit		
Transportation and Transit Master Plan	Works & Transportation Department Planning, Design & Development Department	• 95% of households are within 400 m of transit during peak service hours • Central Downtown transit station • Average weekday ridership of 49,150 riders • Report on Air Quality Strategic Direction • Creates Travel Management Associations for key areas of commercial/industrial activity
AcceleRide Program BRT Strategic Implementation Plan (Züm)	Works & Transportation Department	• Phase 1 of the Züm initiative projects an average daily reduction of 49,691 vehicle kilometers travelled annually through the shift from car trips to buses – an approximate annual reduction of 4,280 tonnes of carbon dioxide emissions, 218 kg/year of methane and 472kg/year nitrous oxide • 3 new BRT corridors (Queen St, Hurontario/Main St and.Steeles Ave) integrated with City-wide public transit network
SmartDriver	Works & Transportation Department	• Teaches drivers how to drive more fuel efficiently
Smart Commute Brampton-Caledon	Smart Commute (non profit) Planning, Design & Development Department	• In 2009, Smart Commute Brampton-Caledon resulted in the elimination of 7,428 trips; reduced 753,070 km of single occupant vehicle trips; and reduced 175,429 kg of GHG emissions • Proposal for rideshare pilot program for Brampton that customized City employee ride matching services through and online tool, offers and emergency ride home program and a preferred parking program • Discounted transit pass program for members of Smart Commute Brampton-Caledon
E-Ride	Works & Transportation Department	• Easy-to-use tool that makes transit-planning interactive and more efficient • Interactive Voice Response (IVR) to real time information over the phone • NextRide Program – locates nearest bus stops and routes
SmartBus technology	Works & Transportation Department	• Automatic vehicle location, automatic passenger counts, traffic signal priority, real time information
Employee Transit Pass Agreement	Works & Transportation Department	• Employee Transit Pass Agreement - Offers City employees a 50% discount off of the monthly transit pass
Fleet		
Biodiesel Fuel Program	Works & Transportation Department	• In 2003, Brampton became the first municipality in Canada to use biodiesel fuel in its fleet of vehicles and equipment
Green Fleet Plan	Works & Transportation Department	• 'Right-Sizing' vehicles • Purchasing of Smartcars and Hybrid City vehicles has reduced the City's CO2 emissions by 32,000 kg per year and saved the City $13,000 in fuel/year • E3 Fleet Certification (energy, environment, excellence)

Initiative	Key Lead	Successes
Corporate Anti-Idling Policy	Works & Transportation Department Community Services Department	• Anti-idling policy began in 2005 restricting city vehicles or equipment from idling longer than 3 minutes • Installation of electronic anti-idling modules
M5/Vehicle software	Works & Transportation	• Computerized engines and transmissions reduce exhaust emissions by optimizing engine operating parameters and transmission shifting
Active Transportation		
Pathways Master Plan	Planning, Design & Development Department Community Services Department Works & Transportation Department	• 120km of existing trails and pathways • Revised pathways routing plan • New Road ROW standards that incorporate bike lanes, and multi-trails • Wayfinding Signage Program – Community destinations on the trail network identified – TDM Grant • Official Plan amendments integrate Pathways issues into the Transportation section providing heightened status for cycling and pedestrian facilities • CAN Bike Training Program • Trail Guide
Bike & Ride	Works & Transportation Department	• Bike Rack included on every City bus in Brampton
Alternative Design Standards (ADS)	Planning, Design & Development Department Works & Transportation Department	• Application of ADS including promotion of transit and pedestrian activity through design in the Mount Pleasant Secondary Plan
Active Transportation Initiative	Region of Peel Planning, Design & Development Department	• Web site to be launch in the spring of 2010 that provides routing for cyclists and pedestrians using GIS applications. • Communication Plan to promote the benefits of active Transportation • Regional Official Plan amendments with dedicated Active Transportation section and policies • Regional Road ROW incorporate cycling facilities
Road Operations		
Salt Management Plan/EPoke	Works & Transportation Department	• Reduces salt usage and ensures effective storage • EPoke equipment reduces road salt usage by as much as 25%
LED traffic signals	Works & Transportation Department	• Green procurement strategies that contribute to increased environmental performance • Reduced energy and maintenance costs with the implementation of LED traffic signals • Low VOC pavement markings help to reduce GHG emissions

Pillar 2:

Managing Growth

In accordance with the requirements of the Growth Plan, creating complete, higher-density communities is a significant priority for the City of Brampton. The goal of Pillar 2 is to establish the importance of managing all levels of development growth including infrastructure, community services and transit, in order to support growth that maximizes services levels in a fiscally responsible manner. Growth management and intensification strategies encourage a variety of housing, employment, recreational and commercial opportunities however it is essential for such intensification targets to integrate open space and efficient land and resource management strategies to successfully create a vibrant and environmentally sustainable Brampton.

Initiative	Key Lead	Successes
Growth Management Policy		
Official Plan Amendment and Growth Plan Conformity	Planning, Design & Development Department	• Annual growth rate of 6.6% • Brampton to accommodate population of 725,000 by 2031 • Brampton is the youngest community in the Toronto census metropolitan area • Brampton has approximately 8,974 hectares of Greenfield land
Mount Pleasant Secondary Plan	Planning, Design & Development Department	• Sustainable development fabric involving mixed use nodes along the transit spine collector road that combine increased densities, low impact development, a mix of land uses and superior urban design to represent unique activity areas and focal points for an entire community • Establishment of a continuous natural heritage system that connects woodland/wetland areas with naturalized channel/corridors • Restoration of wetland hydrology and other enhancement efforts will contribute to an increased amount of wildlife and fish habitat • Proposed woodland restoration areas to increase the size of existing forest patches, including interior habitat • Wetland creation is proposed to establish open water and shallow marsh wetlands to restore and enhance displaced wetland functions • Relocated channels and swales will be designed to incorporate a range of terrestrial and aquatic habitat functions • Natural cover will increase from 7% to 17% in the recommended natural heritage system • Green infrastructure – SWM and Low impact development measures • Transit Oriented Development – mixed uses and live/work and community walkability • NHS identification, protection, restoration and enhancement (from existing 8% of 18%)
Strategic Plan: Six Pillars Strategic Plan Update (Consultation 2012)	Corporate wide	• Young and Ethnically diverse population • Pillar 3: Protecting Our Environment and Enhancing our Community
Growth Management Program	Planning, Design & Development Department	• Detailed approach to meeting the immediate and longer term needs of its new and growing communities

Initiative	Key Lead	Successes
Healthy Communities		
Environmental Master Plan	Planning, Design & Development Department Corporate-wide	• Establishing a sustainable environmental framework for the City as a corporation, and land use approval authority and a community leader • Identifying opportunities for improving environmental performance for Brampton's future health and wellness
Healthy Community Guidelines	Region of Peel	• Set of guidelines to measure the health attributes of new communities
Sustainable Community Design Guidelines (Phase 1) Measuring the Sustainability of New Development (Phase 2)	Planning, Design & Development Department PD&D in partnership with the City of Vaughan and Town of Richmond Hill	• Phase 1 – preparation of qualitative urban design and community development principles, and guidelines for the development of new secondary plan communities, block plans, site plans and infill development. • Phase 2 - preparation of sustainability metrics (i.e. quantitative performance targets) for new development applications , and as appropriate, update SCDG qualitative principles in Phase 1.
Recreational Programs	Community Services	• Extensive list of recreational programs servicing all communities and age groups
Environmental Educational Programs	Community Services	• Brampton Wilderness Centre Outdoor Program provides hands-on indoor and field programs /activities for cooperation and leadership tasks, teambuilding initiatives, and developing communication skills, based on the Ontario curriculum. • Brampton Clean City Green Education Programs /workshops are offered from pre-school to secondary schools classes, as well as community groups and special interest organizations. These programs communicate simple to complex environmental subjects in a fun and interactive way that is based on the Ontario school curriculum.
William Osler: Brampton Civic Hospital	Private	• New facility to accommodate future growth
Sustainable Neighbourhood Retrofit Action Plan (SNAP)	Toronto and Region Conservation Authority in partnership with City of Brampton and Region of Peel	• Strategies to retrofit existing neighbourhoods to achieve high environmental performance by an accelerated transformation of existing community attributes to urban sustainability and preparedness for climate change, including ; i.e. stormwater management facility retrofit, Low impact development measures, natural heritage system and urban tree canopy enhancements, energy audits and retrofits, water efficient gardens, etc.
Heritage Studies and Adaptive Reuse Plans	Planning, Design & Development Department	• 23 Heritage Conservation Plans • Heritage Community Designations

Pillar 3:

Protecting our Environment

Brampton, in partnership with the Conservation Authorities, has committed to adopting management practices that aim to support, restore and enhance the natural systems and habitats throughout the City. Public and open spaces in Brampton should be provided to support the variety of passive and active recreational needs of residents while also maintaining the natural and open space network to achieve a balanced and healthy system. Efforts must be made to apply an ecosystem approach that collectively evaluates the natural, economic, social and cultural issues. Growth management must also ensure that future intensification and greenfield development does not disturb or harm existing natural areas and resources.

Initiative	Key Lead	Successes
Downtown Revitalization	Planning, Design & Development Department	• Mix of uses: arts and culture (Rose Theatre), transit, employment, below-grade parking, new condominiums, retail and City Hall • Pedestrian friendly environment
Landscape Design Guidelines Development Design Guidelines Subdivision Design Manual	Planning, Design & Development Department	
Natural Heritage System Planning		
Official Plans • 2006 Official Plan • Region of Peel Official Plan	Planning, Design & Development Department Region of Peel	• Section 4.5 of Official Plan, "Natural Heritage and Environmental Management" provides policies for implementing an ecosystem approach to land use planning through the subwatershed study process, and specific policies include the protection of valleylands and watercourses, wetlands and woodlots. • ROP protects Core Greenlands and directs area municipalities to protect Natural Areas and Corridors and Potential NACs.
Natural Heritage • Terrestrial Natural Heritage Strategy (TRCA) • Terrestrial Ecosystem Enhancement Model (TEEM) and Urban TEEM (CVC) • Draft Fletcher's Creek Restoration Study, 2012(CVC) Natural Areas Inventory • Brampton Natural Areas Inventory • Peel-Watersheds Natural Areas Inventory (ROP/CVC/TRCA) Greenland Securement • Greenland Securement Strategies (ROP/CVC/TRCA) • Greenland Securement Committee (ROP) • Urban Forest Effects Model Study (UFORE) (ROP, Brampton, Mississauga, Caledon, TRCA, CVC)	Conservation Authorities in consultation with area municipalities CVC in partnership with Brampton Credit Valley Conservation Planning, Design & Development Department CVC/TRCA in partnership with Region of Peel and area municipalities Region of Peel in partnership with Conservation Authorities and area municipalities	• Natural Heritage management initiatives support the implementation of Official Plan policies to develop sustainable communities • The City is involved in many of these initiatives with Conservation Authorities and/or Region of Peel • Natural and cultural-successional vegetative communities in Brampton comprise approximately 2800 hectares (10.2%) of the City • Natural area securement in public ownership through acquisition, eco-gifts, conservation easements, etc. will aid to protect the natural heritage system and ensure its long term management and monitoring

Initiative	Key Lead	Successes
Natural Heritage System Management		
Brampton Valleys Naturalization Program Main's/Fletcher's Creek Corridor Planting Urban Forestry • AgPlan Forest Inventory • Arboricultural Assessments • Woodlot Management Strategy • Comprehensive Forest Maintenance Manual Tracking our Tree Inventory Heritage Tree Proposals Invasive Species • Brampton Invasive Species Management Program (inventory and removals management) • Invasive Species Strategy (CVC) • Fauna • Goose Management	Planning, Design & Development Department CVC – Conservation Youth Corp MNR – Stewardship Rangers Community Services Department CVC, PD&D and Community Services Departments, Community Schools Community Services Department	• By 2012, the naturalization initiative will result in approximately: 24,000 trees, 200,000 shrubs and 60,000 native perennials will be planted in more than 162 hectares (400 acres) of valleylands • Naturalization, habitat-creation and reduced maintenance • The management and maintenance of natural woodlands and valleys, and the urban tree canopy requires specialists in forestry, aboriculture and horticulture.
Conservation Areas		
Claireville and Heart Lake Conservation Area Management Plan (TRCA) Heart Lake Conservation Area Management Plan (TRCA)	Toronto and Region Conservation Authority	• Significant natural areas/resources which are integral to the City of Brampton natural heritage system and which provide passive and environmental recreation, and education and outdoor summer programs.

Initiative	Key Lead	Successes
Watershed Management		
Liveable Peel, Ensuring Sustainable Watersheds in 2051 (ROP) Subwatershed Studies (Integrated NHS Planning) CVC Watershed (Mount Pleasant, Fletcher's Creek, Credit Valley and BramWest) TRCA Watershed (Countryside Village, Vales of Humber, Springdale, BramEast) Watershed Planning and Regulations Policies 2010 (CVC) Credit River Water Management Strategy (CVC) Credit River Flow Study (CVC) Monitoring Programs (Fletcher's Creek, Effectiveness, Integrated Watershed, and Comprehensive Groundwater) (CVC) Living City Strategy and Policies (TRCA) Greening our Watersheds: Revitalization Strategies for the Etobicoke and Mimico Creeks (TRCA) Etobicoke-Mimico Watersheds Coalition (TRCA) Humber River Watershed Plan Humber Watershed Alliance (TRCA)	Planning, Design & Development Department Region of Peel Conservation Authorities	• As stipulated in the Official Plan, new development areas of the City require subwatershed studies • Natural heritage system identification, protection, restoration and enhancement based on comprehensive characterization, monitoring and modeling • Green infrastructure – SWM, Low impact development measures • Protects the features and functions of the Credit River watershed and is aimed at ensuring "abundant, safe and clean water" now and in the future for both the people and wildlife

Initiative	Key Lead	Successes
Stormwater Management		
Stormwater Management Master Plan	Planning, Design & Development Department Works & Transportation Department	• 150 existing stormwater management ponds with proposed 200 additional ponds to address the City's build-out • The SWMMP directs management and maintenance program for the City's existing ponds and for all future ponds. This study will be carried out by W&T. • Additional recommendations to undertake: • Watercourse study to proactively manage erosion on the City's watercourses. This study will be carried out by W&T. • A study to consider the implementation of a storm sewer rate. This study will be carried out by Works & Transportation and Finance.
Stormwater Management Retrofit & Enhancement Study Stormwater Management and Maintenance Program	Planning, Design & Development Department Community Services Department Works & Transportation Department TRCA/CVC	• Ongoing management, maintenance and monitoring
Functional Servicing Report Terms of Reference Draft Low Impact Development Stormwater Management Planning and Design Guideline (TRCA/CVC)	Planning, Design & Development Department Works & Transportation Department	
Lakes and Watercourses		
Lake Assessment Study and Lake Management and Monitoring Report	Planning, Design & Development Department Community Services Department Works & Transportation Department	• Existence of 14 Lakes • Well-defined lake management and monitoring program

Initiative	Key Lead	Successes
Watercourse Remediation and Restoration Program Redside Dace Rehabilitation Projects (West Humber Subwatershed began 2009) Credit River Fisheries Management Plan (CVC) and draft CRFMP – Guide for Planners Humber River Fisheries Management Plan (TRCA) Yellow Fish Road Program (TRCA) Peel Channels Remediation Study	Planning, Design & Development Department Community Services Department Works & Transportation Department TRCA and CVC in consultation with area municipalities	
Potable Water		
Water Smart Peel	Region of Peel	• Raising awareness and education about water efficiency • Set targets, goals, objectives and monitoring program i.e. reducing peak day demand by 10% by 2015
Education and Awareness		
Adopt "Your" Tree Program Tree Dedication Program Big Tree Challenge (Friends of Claireville) Community Tree Planting Day Landowner Guides to Natural-Open Space Areas	Community Services Department	• City stewardship, education and awareness

Initiative	Key Lead	Successes
Environmental Studies and Guidelines		
Comprehensive Study Terms of Reference (Subwatershed Plan, Environmental Implementation Report and Environmental Impact Study) Woodlot Development Guidelines Guidelines for the Assessment of Existing Tableland Vegetation	Planning, Design & Development Department Community Services Department	• General preservation of woodlots • Conserving woodlots through the development process
By-laws and Enforcement		
Park-lands By-law Tree Preservation By-law Woodlot Conservation By-law Topsoil Removal By-law Fill By-law Property Standards By-law Sewage By-law	Planning, Design & Development Department Community Services Department Corporate Services Department Works & Transportation Department	• Management, control regulations, maintenance and usage of all park-lands and water areas situate within parklands • Conserves and protects trees on private land within the City of Brampton • Regulations regarding the injuring or destruction of trees in areas of the City of Brampton • Protect and conserve topsoil within the City of Brampton • Prohibit or regulate the placing or dumping of fill in areas of the City of Brampton
Public and Open Space		
Parks. Culture and Recreation Master Plan	Community Services Department Planning, Design & Development Department	• Major new park spaces planned for the future (100 acre parcels) • 5 watersheds and 14 lakes • 400 parks, 120 Recreational Centres and related facilities • City owns over 6,000 acres of park land and natural environment

Initiative	Key Lead	Successes
Chingaucousy Park redevelopment Loafers Lake and Norton Place Master Plans Fitzpatrick Community Park Development Plan	Community Services Department Planning, Design & Development Department	• Naturalization of online ponds and Spring Creek
Energy		
Energy Management Guidelines	Buildings and Property Management Department	• Provides advice on how to integrate energy conservation into projects
Facility Maintenance Data Base	Buildings and Property Management Department	• Tracks energy consumption of over 30 City owned and operated facilities
Brampton Energy Management Retrofit Program Energy Conservation Audits	Buildings and Property Management Department	• Energy efficiency improvements (building automation systems, LED traffic signals, street lighting)
Algonquin Energy from Waste Facility	Region of Peel	
Rethinking Energy	Region of Peel	• Recommendations for energy reporting • Short and long-term goals to implement energy monitoring software and building automation systems • Recommends and provides cost information and establishment of a Renewable Portfolio Standard to purchase a percentage of all energy from renewable sources • Recommends creating renewable energy parks to provide local sources of renewable energy
Building Energy Audit Program	Region of Peel	• 40% of buildings have been audited to date, with the goal to audit 100% of buildings by 2011
Sustainable Procurement and Life Cycle Cost-Based Decision Making	Region of Peel	• Added to the Purchasing By-Law to permit taking sustainability into account for procurement decisions
Energy Consumption and Greenhouse Gas (GHG) Emissions Annual Report	Region of Peel	• Annual energy and GHG emissions audit for all Regional operations, across all departments

Initiative	Key Lead	Successes
Waste		
Waste Management Study 2007	Planning, Design & Development Department	• Recommended a planning policy framework for the regulation of incineration and waste processing, transfer and disposal uses
Fall Leaf Vacuum Program	Works & Transportation Department	• Efficient curb side collection of leaf waste using vacuum vehicles
Spring and Harvest clean-ups and Downtown Clean Sweep 3R's Program Play Clean Clean City High School Green Club Council Commissioners Green Challenge	Community Services Department Brampton Clean City Committee	• Community Pride and awareness • Clean and attractive public spaces • Over 60,000 participants annually • Education and Awareness
Long-term Waste Resource Management Strategy	Region of Peel	• Region of Peel achieved a 45.2% waste diversion rate in 2004
Algonquin Energy from Waste Facility	Region of Peel	• Regional diversion targets and programs
Peel Organics Recycling Program Peel Composting Program	Region of Peel	• Weekly curb-side organics pick-up • Centralized composting of collected organics and yard waste.

Pillar 4:

A Dynamic & Prosperous Economy

Several industry leaders have chosen to establish their headquarters in Brampton which has contributed to Brampton's success in fostering a dynamic and prosperous economy. Pillar 4 focuses on sustaining this success by encouraging employment growth that fosters a competitive business environment, including advanced manufacturing and design technologies that are sustainable, green and enhance Brampton's environmental performance.

Initiative	Key Lead	Successes
Employment Lands and Districts		
Employment Areas	Planning, Design & Development Department	• Number of Large Corporate Headquarters (i.e. Loblaw Companies, Maple Lodge Farms) • Rogers Call Centre (re-use of former Nortel complex) • In-migration of employees from other communities • 40 % of Brampton's workforce both live and work in Brampton
Pearson Eco-Industrial Park	TRCA/GTAA/Toronto, Mississauga, Brampton Economic Development and Communications Department Planning, Design & Development Department)	• Eco-Efficiency Program, Sustainable Energy Plan, Program, Employee Transportation, Green Parking Lot Program and Employment Land Planting Program • Approximately 600 hectares of 'green' roof space in the study area
Mt. Pleasant Station Area	Planning, Design & Development Department	• Live/Work opportunities
Downtown Revitalization	Planning, Design & Development Department	• City Hall and Rose Theatre • 6 new high density residential/mixed use buildings • 1 LEED certified residential building.
Green Business Strategies		
Green Economic Strategy	Economic Development and Communications Department	• Brampton's labour force grew from 186,250 in 2001 to 240,985 in 2006, an increase of 54,735 persons or 29.39% during the five year period • Supporting start-up and entrepreneurial ventures through the Small Business Enterprise Centre.

Pillar 5:
Community Lifestyle

Supporting a high quality of life for residents is at the core of Brampton's mandate and is the basis for Pillar 5. It ensures that Brampton is equipped with a variety of attributes including parks, recreational and leisure facilities, heritage features, multiculturalism and arts and culture. This also includes enhancing Brampton's historic identify as the Flowertown of Ontario which is not only about creating beautiful and visually attractive landscapes, but also includes the responsibility to 'placemake' in an efficient and environmentally sustainable manner.

Initiative	Key Lead	Successes
Flower City		
Flower City Strategy Buffer Flower Planting specifications and guidelines Communities in Bloom	Corporate Strategy	• Placemaking • City beautification • City stewardship • Partnership • Promotion • Interdepartmental Committee • Over 150 new City partnerships with business, community groups, schools, residents • Influenced the integration of aesthetic considerations into city programs, projects, • Civic Pride – identify various awards that have been won
Brampton Clean City		
Spring and Harvest clean-ups and Downtown Clean Sweep	Community Services Department Brampton Clean City Committee	• Community Pride and awareness • Clean and attractive public spaces • Over 60,000 participants annually
Adopt-a-Park program GIMME 5 3R's Program Play Clean Commissioners Green Challenge	Community Services Department Brampton Clean City Committee City-wide	•Community Pride and awareness • Clean and attractive public spaces • Education and public outreach programs (Youth Park & Trails Stewardship Program, Living Active – Living Green, Environmental education workshops

Initiative	Key Lead	Successes
Interest Groups		
Clean City Committee Clean City High School Green Club Council & Mayor's Youth Team Clean and Green Schools Clean City Committee	Community Services Department City-wide Planning, Design & Development Department	• City stewardship • Citizen education and engagement
Food		
Community Garden Program	Community Services Department	• Community plots in City parklands
Brampton Farmer's Market Community Gardens	Economic Development and Communications Department	• Local Ontario produce – 100-mile radius of locally grown food • More than 60,000 visitors/year
Air Quality		
Anti-Idling Policy	Works & Transportation Department	• Anti-idling policy began in 2005 restricting city vehicles or equipment from idling longer than 3 minutes • Installation of electronic anti-idling modules
Anti-Idling Bylaw	Corporate Services Department	• 2011 bylaw to restrict idling on a City wide basis
Biodiesel fuel in City vehicles	Works & Transportation Department	• In 2003, Brampton became the first municipality in Canada to use biodiesel fuel in its fleet of vehicles and equipment
Transportation and Transit Master Plan Sustainable Update for the City of Brampton Air Quality Strategic Direction	Works & Transportation Department	• Use of low-emission street sweepers • Partnering with Natural Resources Canada and the Clean Air Partnership to educate the public about reducing engine idling in hot spots throughout the City • Community Forest Project at Hurontario absorbs transportation pollutants

Pillar 6:

Excellence in Local Government

Excellence in governance includes the responsibility to be a leader in the efficient and effective delivery of services. Brampton aims to achieve this through encouraging open and accountable leadership, citizen participation, professional delivery of municipal services, timely decision-making, strong financial management and a variety of strategic partnerships.

Initiative	Key Lead	Successes
Facilities		
Recreational Centres & Facilities	Community Services Departments Planning, Design & Development Department Building and Property Management Department	• Cassie Campbell Community Centre & Brampton Soccer Centre • 120 recreation centres, corporate buildings/properties, and other specialized facilities that include: ice rinks, pools, fitness areas, racquet sports courts, indoor soccer centre, curling rinks, ski hill, indoor tennis centre, seniors centre • Energy Conservation Audits for all municipal facilities • 3.6 million square feet of facility space • Ongoing building management and operating strategies for city facilities
LEED Buildings	Planning, Design & Development Department Buildings and Property Management Department Community Services Department Works & Transportation Department	• Cyril Clark Library and Fire Station 212 • Downtown Development incentives for LEED Gold buildings
Priorities and Directions		
Brampton Environmental Planning Advisory Committee	Planning, Design & Development Department	• Raising public awareness of environmental initiatives and achievements in the City
Environmental Master Plan	Planning, Design & Development Department Corporate wide	• Moving towards growing green and setting goals for City-wide environmental sustainability
Green Procurement Strategy	Financial and Information Services Department Buildings and Property Management Department	• Procurement strategy focuses on greening - including cleaning products, furniture, building fixtures and vehicles
Green Economic Strategy	Economic Development and Communications Department	• Setting the stage for future competitive business infrastructure for green/environmental technologies and business services

Appendix K

Canvas of Initiatives

Canvas of Environmental Initiatives

The Canvas of Environmental Initiatives is a snapshot of the many ways in which Brampton and its conservation partners are improving the City's environmental performance today. Over 175 initiatives are listed and categorized according to their relative relationship to the Six Core Components identified in the Brampton Environmental Master Plan. The canvas includes initiatives that are currently being spearheaded by the City of Brampton, Region of Peel, Credit Valley Conservation and the Toronto and Region Conservation Authority, however it should be noted that it does not yet highlight the many green initiatives that are being undertaken by Brampton businesses, residents, and/or environmental groups. Given the inter-related nature of many of these initiatives, some may relate to more than one of the core components. The Canvas of Environmental Initiatives is intended to be a working list and will be updated to reflect new environmentally sustainable initiatives as they are identified and implemented.

Air

Transit
Transportation and Transit Master Plan
Connect 10 – Hurontario Study
AcceleRide Program
BRT Strategic Implementation Plan (ZÜM)
SmartDriver
Smart Commute Brampton-Caledon
E-Ride
SmartBus technology
Employee Transit Pass Agreement
Ridership awareness campaign

Fleet
Biodiesel Fuel Program
Green Fleet Plan
Smart Cars and Hybrids
Municipal Fleet Anti-Idling Policy
EPoke
M5/Vehicle software

Active Transportation
Pathways Master Plan
Bike & Ride
Pathways Pocket Book
Pedestrian Safety Plan
Active Transportation Plan (ROP)
Alternative Design Standards
New Road ROW Standards (bike paths/lanes – Rutherford Road Implementation)
Walk to Work-School Day
Active Transportation Interactive Web-Based Map

Road Operations
LED traffic signals
Green Guide for Roads
Solar Panels for Parking Meters
Low-VOC & water-borne paints in traffic markings
Streetscape Buffer Planting Guidelines
Environmental Assessments

Air Quality
Anti-Idling Policy and Bylaw, and Communications Plan
Sustainable Update for the City of Brampton Air Quality
Open Air Burning Strategy

Strategic Direction
Smog Response Plan
Clean Air Partnership/GTA Clean Air Council
Peel Region Air Quality Working Group
Peel's Air Quality Partnership
Peel Air Quality Monitoring Program

Land

Strategic Planning and Growth Management
Strategic Plan: Six Pillars
Strategic Plan Update (proposed 2012)
2006 Official Plan
OP Amendment and Growth Plan Conformity
Mount Pleasant Secondary Plan
Growth Management Program
Development Team

Healthy Communities
William Osler: Brampton Civic Hospital
Emergency Plan Bylaw
Sustainable Neighbourhood Retrofit Action Plan (SNAP) – County Court Project 2012
Heritage Studies and Adaptive Reuse Plans
Downtown Revitalization
Landscape Design Guidelines
Development Design Guidelines
Sustainable Community Development Guidelines
Measuring Sustainability of New Development
Subdivision Design Manual
Street Tree Planting Standards
Street and Park Tree Replacement Program
Snelgrove Restoration Plan
Heritage Cemetery Conservation Program
Alderlea Restoration Project
Bowstring Bridge Rehabilitation Project
Heritage Property Incentive Grant Program (bylaw)
Community Improvement Plans
Green Cities Program (CVC)
Natural Neighbourhoods in Fletcher's Creek (CVC)
Living City Campaign (TRCA)
Peel Region Living City Carbon Footprint Calculator (ROP/TRCA)
Chapelview Housing Development LEED (ROP)
Healthy Community Guidelines (ROP)
Expansion of Peel Smoke-Free By-law (ROP)

Natural Heritage System Planning and Management
Natural Heritage and Environmental Management Strategy (proposed 2012)
Region of Peel Official Plan
City of Brampton Subwatershed Studies (in consultation with CVC & TRCA)
CVC Watershed: Mount Pleasant, Fletcher's Creek, Credit Valley, Northwest Sandalwood Parkway, Tributary 8B, Bram West; Heritage Heights
TRCA Watershed: Countryside Villages, Vales of Humber, Springdale, SP47, Bram East
Peel-Watersheds Natural Areas Inventory (ROP|TRCA|CVC)
Brampton Natural Areas Inventory
Urban Forest Effects Model Study (UFORE)
Brampton Urban Forest Technical Study
Brampton Urban Forest Management Program
Brampton EAB Management Program
Woodlot Management Program
Forest Maintenance Manual
Disease and Pest Program
Invasive Pest Preparedness and Integrated Pest Management
Active Tree Inventory System
Heritage Tree Proposals
Block Pruning Program
Terrestrial Natural Heritage Strategy (TRCA)
Terrestrial Ecosystem Enhancement Model Urban TEEM (CVC)
Invasive Species Strategy (CVC)
Brampton Invasive Species Management Program
Hickory Wood Restoration Project
Brampton Wilderness Centre Restoration Project
Brampton Valley Naturalization Program
Main's/Fletcher's Creek Corridor Planting
Greenland Securement Strategies (CVC|TRCA)
Greenland Securement Committee (ROP)
Goose Management
Draft Fletcher's Creek Restoration Study

Conservation Areas
Claireville Conservation Area Management Plan Update (TRCA)
Heart Lake Conservation Area Management Plan (TRCA)
Education and Awareness
Adopt "Your" Tree Program
Tree Dedication Program
Community Tree Planting Days (Scouts Canada, Landowner Guides to Natural-Open Space Areas

Environmental Studies and Guidelines
Comprehensive Study Terms of Reference:
Environmental Implementation Report
Environmental Impact Study
Woodlot Development Guidelines
Guidelines for the Assessment of Existing Tableland Vegetation

Bylaws and Enforcement
Parklands Dedication Bylaw
Woodlot Conservation Bylaw
Tree Preservation Bylaw
Topsoil Removal Bylaw
Fill Bylaw
Noise Bylaw
Property Standards Bylaw
Anti-Idling Bylaw and Communications /Education Plan
Purchasing Bylaw

Public and Open Space
Parks and Recreation Master Plan
Chinguacousy Park Redevelopment
Loafers Lake and Norton Place Master Plans
Fitzpatrick Community Park Development Plan

Employment Lands and Districts
Employment Land Strategy
Pearson Eco-Industrial Park Strategy
Mount Pleasant Station Area
Downtown Revitalization
Central Area Community Improvement Plan

People

Flower City
Flower City Strategy
Buffer Flower Planting specifications/guidelines
Communities in Bloom
Urban Design Awards
Downtown Beautification Program
Gateways Program
Flower City Floral Beds
10 Million Bulb Challenge
Brampton Fall Fair
Green Education: Teacher Preparation Package
School Visits: Urban Forestry
Door Hangers: Residential Tree Pruning

Brampton Clean City
Spring and Harvest Clean-Ups
Downtown Clean Sweep
Adopt-a-Park program
GIMME 5
3R's Program
Play Clean
Commissioners Green Challenge
Teacher Preparation Package – Green Education
Environmental Education Programs

Interest Groups
Brampton Environmental Planning Advisory Committee
High School Green Club Council
Mayor's Youth Team
Clean and Green Schools
Brampton Wilderness Center Outdoor Classroom
Clean City Committee
Brampton Heritage Committee
Heart Lake Secondary School
Roberta Bondar Public School: Passionate Earthlings
North Peel Secondary School
Rotary Club of Brampton (Loafer's Lake beautification)
Meadowvale Cremation Gardens
Brampton Horticultural Society
Chingaucousy Garden Club
Eco-Buzz (Peel Environmental Youth Alliance)
Harvest Community Services of Peel
Valleybrook Green Team & Community Stewardship

Food
Brampton Farmer's Market
Community Gardens

Strategic Priorities and Directions
Emergency Management Plans
Environmental Master Plan
Green Procurement Strategy
Green Economic Strategy
Parks Naturalization

Water

Stormwater Management
Stormwater Management Master Plan
Stormwater Management Retrofit & Enhancement Study
Functional Servicing Report Terms of Reference
Low Impact Development Stormwater Management Planning and Design Guideline (TRCA|CVC)
Thermal Impacts of Urbanization and Preventative and Mitigation Measures (CVC study)
Water Efficiency Plan (ROP for Potable Water)
Water Smart Peel (ROP)
Peel Children's Groundwater Festival (ROP|CVC|TRCA)
Salt Management Plan
Street Sweeping
Sewage Bylaw

Lakes and Watercourses
City of Brampton Lake Assessment Study
City of Brampton Lake Management and Monitoring
Watercourse Remediation and Restoration Program
Credit River Fisheries Management Plan (CVC)
Draft CRFMP – Guide for Planners (CVC)
Humber River Fisheries Management Plan (TRCA)
Yellow Fish Road Program (TRCA)
Redside Dace Rehabilitation Project (Ontario Streams)
Peel Channels Remediation Strategy

Watershed Management
Liveable Peel: Ensuring Sustainable Watersheds in 2051 (ROP)
CVC Watershed Planning and Regulations Policies 2010
Credit River Water Management Strategy Update (CVC)
Credit River Flow Management Study (CVC)
CVC Monitoring Programs (Fletcher's Creek, Effectiveness, Integrated Watershed, Comprehensive Groundwater)
TRCA Living City Strategy and Policies
Greening our Watersheds: Revitalization Strategies for the Etobicoke and Mimico Creeks 2002 (TRCA)
Etobicoke-Mimico Watershed Coalition (TRCA)
Humber River Watershed Plan (TRCA)
Listen to River (Humber River Watershed Report) (TRCA)
Humber Watershed Alliance (TRCA)

Energy

Facilities
Solar Panels on Fire Stations
Geo Thermal Heating\
Wellness and Casey Campbell are now benefiting from the installation of heat plat exchangers
LEED Buildings – 2 fire stations (Gold)
Asbestos Management Program
Updating electricity & gas procurement strategy
Lighting retrofits
Standardize Building Automation Systems & operations
Building Retrofits

Energy
Algonquin Power Energy from Waste Facility
Energy conservation audits
Rethinking Energy
Municipal Building Retrofit Program
Sustainable Procurement/Life Cycle Cost-Based Decision Making
Peel Climate Change Strategy (Partnership – ROP, Mississauga, Brampton, Caledon, TRCA and CVC)
PCCS Implementation Plan
PCCS Community and Corporate GHG Emissions Inventory
Energy Consumption Annual Report
Energy Awareness for Office & Operational staff
Energy Consumption Benchmarking – internal/external
Energy Partnerships
Preventative Maintenance Programs

Waste

Waste Management
Fall Leaf Vacuum Program
Long-term Waste Resource Management Strategy (ROP)
Incineration and Waste Transfer and Disposal Study
Peel Organics Composting Program (ROP)
Hazardous Waste Registration

Brampton Environmental Master Plan

brampton.ca Flower City