



*City of Pickering
Sustainable Development Guidelines*

Consultants' Final Report
May 2007



ACKNOWLEDGMENTS

"The future of our planet will be determined in our cities". That was the conclusion of the 1992 Earth Summit. Over a decade and half since then we are slowly beginning to see changes in the way our City functions. This set of Sustainable Development Guidelines is yet another step in the direction to create a more sustainable environment for ourselves and our children. We would like to thank the following people for their hard work and dedication to shaping a new future for all of us:

Pickering Council (2003 – 2006) Pickering Council (2006 – 2010)

- David Ryan, Mayor
Maurice Brenner, Councillor
Bill McLean, Councillor
Rick Johnson, Councillor
Kevin Ashe, Councillor
Doug Dickerson, Councillor
David Pickles, Councillor
David Ryan, Mayor
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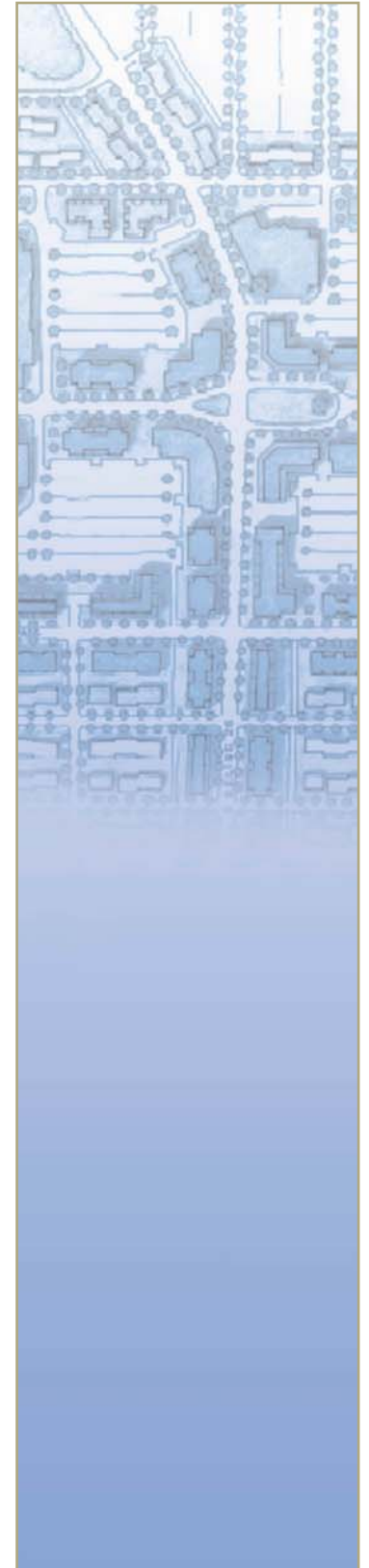
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Dena Lewis, Toronto and Region Conservation Authority
Gary Bowen, Toronto and Region Conservation Authority

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1.0 INTRODUCTION

This document presents draft Sustainable Development Guidelines for the City of Pickering as well as background on what the Guidelines are meant to accomplish, how they work and what other communities are doing to implement sustainable community design. The Guidelines represent a bold vision for community development for the City that will fundamentally change the environmental footprint of each homeowner and promote healthy and liveable neighbourhoods. The Guidelines are intended to apply to all new development – residential and employment for infill, redevelopment and new designated urban areas. This is the third report regarding development of the Guidelines. The previous reports were titled Sustainable Neighbourhood Design Guidelines Interim Reports #1 and #2 dated June 2006 and September 2006.

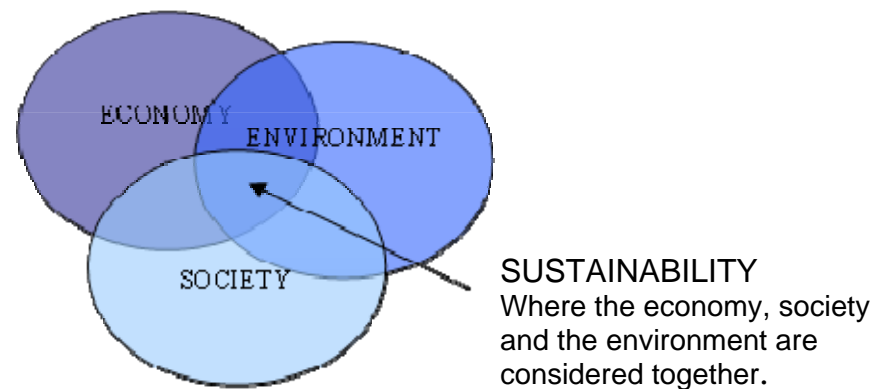
2.0 WHAT ARE SUSTAINABLE COMMUNITIES AND GUIDELINES?

2.1 WHAT ARE SUSTAINABLE COMMUNITIES?

Sustainable communities meet the diverse needs of existing and future residents, contributing to a high quality of life and providing choice and opportunity. They achieve this in ways that make effective use of natural resources, promote social cohesion and inclusion, strengthen economic prosperity, enhance the natural environment and reduce the impact of the built environment. Using this approach the economic, social and environmental needs are balanced across the community.

Figure 1.1 schematically illustrates how these elements come together.

Figure 1.1: The Concept of Sustainability



There are a number of benefits associated with building sustainable communities including healthier living environments, reduced costs for heating and cooling, reduced greenhouse gas emissions, local employment opportunities and safe, liveable communities. Planning for sustainable community seeks to achieve principles such as:

- Creating socially cohesive and diverse communities through a mix of housing types and employment opportunities;
- Promoting alternative transportation and energy;
- Promoting efficient use of resources; and,
- Locating residential areas close to recreational and commercial services with pedestrian and cycling connections.

2.2 THE SUSTAINABLE DEVELOPMENT CONTEXT

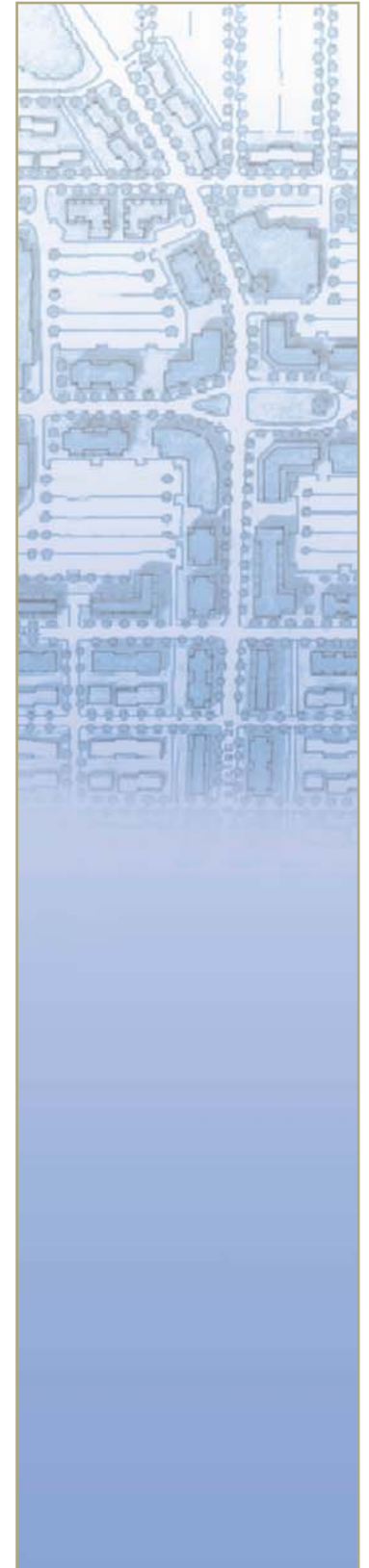
Sustainable development guidelines are a series of standards and targets for new development that promote sustainable communities. They will be one tool among a number of tools currently used for development planning. The City of Pickering's Sustainable Development Guidelines are intended to mesh within the current planning framework, covering two levels of detail. The Guidelines will be used at the neighbourhood plan and site levels. Applying a different set of standards to the two levels of planning recognizes that implementing sustainable development begins at the neighbourhood scale where the natural heritage system, street layout and mix of uses are defined (using Guideline #1 see **APPENDIX A**). Sustainable development details are further defined through successive, more detailed planning approvals including plan of subdivision, site plan, zoning and building permits (using Guideline #2 see **APPENDIX B**).

2.3 MODELS FOR SUSTAINABLE DEVELOPMENT GUIDELINES

2.3.1 WHAT MAKES A GOOD GUIDELINE?

The development of a guideline document needs to consider a number of things to ensure that it is successful. Over the course of researching, consulting on and creating these Guidelines a number of key characteristics were uncovered that should help to ensure that the Guidelines are successful. A successful guideline document should:

- Be simple, easy to use and understand;
- Apply over a long term horizon;
- Apply across a range of scales, reflecting the various levels of planning approval;
- Be comprehensive;
- Encourage innovation; and,



- Make a significant difference in sustainability for the City relative to conventional development (i.e. set significant requirements and then encourage additional innovation).

The above considerations were used to help develop and refine the Sustainable Development Guidelines.

It was also important that we learned from other models and experiences. The following highlights some key models that influenced the Pickering Guidelines.

2.3.2 LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED) NEIGHBOURHOOD DESIGN

The Leadership in Energy and Environmental Design (LEED) system, which is administered by the Canada Green Building Council in Canada, has previously been applied to green building design and multi-unit residential buildings and is based on accumulating points for prescribed criteria. The LEED approach is a voluntary incentive based system, where individual builders choose to meet the standard. The rating system is divided into “Credits” and “Prerequisites” and typically consists of a few prerequisites and many credits. To be certified a project must meet all the prerequisites as well as a certain number of credits which contribute to an overall point total. A minimum point total is required for LEED certification and higher point scores are required for silver, gold, and platinum certification.

In September 2006 LEED USA released its draft guidelines for sustainable community design, LEED-ND (Neighbourhood Design). Similar to the LEED program, which deals with individual buildings, the LEED-ND rating system is a draft document and for American cities that sets sustainability standards for neighbourhood design. The ND guidelines are based on the principles of sustainability, smart growth, urbanism and green building. LEED-ND is aimed at improving land use patterns, neighbourhood design and technology and covers four categories:

- Location/Efficiency;
- Environmental Preservation;
- Compact, Complete and Connected Neighbourhoods; and,
- Resource Efficiency.

Borrowing from the American LEED-ND approach, the Pickering Sustainable Development Guidelines use a flexible point system and minimum standards as their basis. However, because the LEED-ND document was prepared for an American audience, the Pickering Sustainable Development Guidelines have employed a full complement of strategies and targets that fit within a Canadian and

more specifically, a Pickering context. So while some of the broad characteristics of the LEED-ND guidelines have shaped this document, a different set of resources was used to create the individual criteria and standards. In order to address locality, these Guidelines are informed by Canadian case studies and best practices, other municipal sustainability guidelines and local stakeholder input from workshops and meetings. The case studies and best practices are discussed in **Section 4.0** and the results of the stakeholder consultation program are discussed in **Section 5.0**.

2.3.3 OTHER DEVELOPMENT GUIDELINES

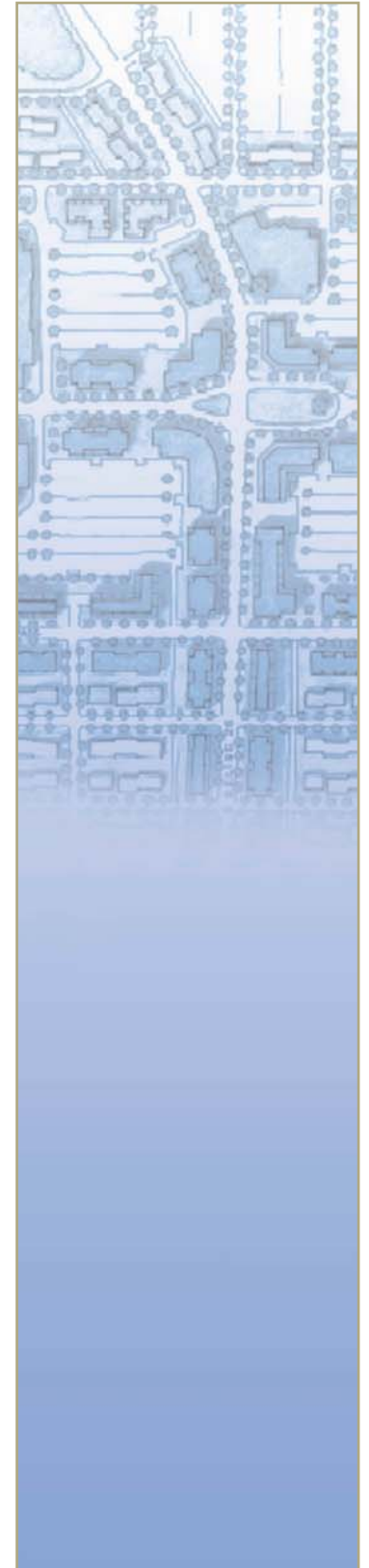
A number of municipalities are also developing or have developed guidelines for sustainable development demonstrating a variety of approaches. Guidelines for sustainable development can generally be:

- Incentive based;
- Education based;
- Public sector leadership based; or,
- Prescriptive/Mandatory.

An incentive based guideline uses some sort of motivation, such as cash, expedited approvals or accreditation (e.g. LEED) to entice developers to adhere to higher standards. An education based approach uses a number of educational tools, such as on-line resources, workshops and permanent information centres to promote the desired development approach. An approach that focuses on public sector leadership is where the municipality, through demonstration projects such as a conversion of public buildings to green buildings, takes the initiative to promote the benefits of green standards. These three approaches are voluntary measures that come with no guarantees. A mandatory approach is where the municipality modifies its by-laws or development guidelines and sets new requirements for development. A mandatory approach allows the City to take a strong position on sustainable development, ensuring a minimum level of performance is achieved for all new development. It is this desire for a minimum level of performance that has motivated the City of Pickering to create a set of Sustainable Development Guidelines. More information on what other cities are doing is provided in Section 4.0.

2.3.4 MADE FOR PICKERING GUIDELINES

The Sustainable Development Guidelines complement the City's existing sustainability program. The City of Pickering has been promoting sustainability through education, consultation and practical action. The City's Sustainable Pickering program is being coordinated through the recently created Office of Sustainability. The City maintains a website describing the various initiatives underway including a local action plan to reduce greenhouse gas emissions (under



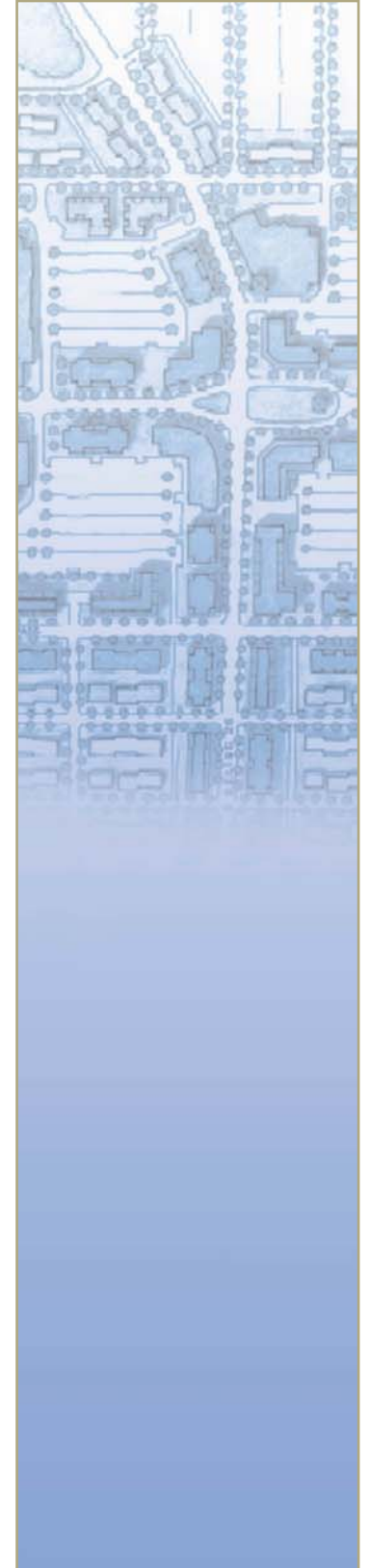


the Partners for Climate Protection program), an environmental awareness program, a benchmarking program, website can be found at:

<http://www.sustainablepickering.com/index.html> and includes links to the initiatives listed above.

The Pickering Sustainable Development Guidelines are considered to be a “made in Pickering” solution because they have been developed locally and:

- Are consistent with the City’s Sustainable Pickering Program;
- Adapt to local, regional and provincial legislative/policy environment;
- Are suitable given the City’s local physical environmental context;
- Are informed by key local regulatory stakeholders (City development approval staff, Toronto Region and Conservation Authority, Durham Region);
- Create a minimum local green standard for all new development;
- Were developed from a LEED base to shape the approach while individual standards and measures are informed by a series of Canadian case studies and best practices.



3.0 WHY DO WE NEED SUSTAINABLE DEVELOPMENT GUIDELINES IN PICKERING?

3.1 A WORLDWIDE MOVEMENT

Urban jurisdictions throughout the world are increasingly confronted with a series of deteriorating conditions related to environmental, social and economic issues. Some of these issues include increased automobile dependency and increased traffic congestion, sprawling development, higher infrastructure costs, lack of affordable housing, contaminated air, water and soil and rising energy costs. At the same time, cities are faced with the pressure to accommodate rapid growth and development. A key challenge for the City of Pickering is planning for long term growth in a manner that addresses a number of crucial economic, environmental and social conditions. These Sustainable Development Guidelines are intended to help address this challenge.

3.2 PICKERING WILL BE GROWING IN THE NEXT DECADE

By 2031 the Region of Durham is expected to grow by 430,000 people and 160,000 jobs¹. A portion of this growth will occur in the City of Pickering². With knowledge of long term projected growth comes economic prosperity and the responsibility to plan for growth so that it occurs in a manner that balances economy, environment and social considerations. In Pickering, the majority of growth will manifest itself as either infill/intensification or greenfield development.

The Province's *Growth Plan for the Greater Golden Horseshoe* mandates that 40% of all growth occurring in the upper-tier municipalities of the Greater Golden Horseshoe municipalities after 2015 must occur within the existing built boundary. This means a significant portion of Pickering's growth will need to be in the form of infill and intensification projects. The Provincial *Growth Plan* also identifies downtown Pickering as an Urban Growth Centre (UGC). UGC's are intended to be focal areas for institutional service, commercial, recreational, transit, cultural and entertainment uses and are to serve as high density major employment centres and share a significant portion of the population. Specifically, downtown Pickering is expected to have a combined density of 200 residents and jobs per hectare. This means that the scale at which intensification is projected to occur is a break from past trends and requires the City to develop strategies that ensure future

¹ *Growth Plan for the Greater Golden Horseshoe*, 2006. Schedule 3: Distribution of Population and Employment for the Greater Golden Horseshoe 2001-2031.

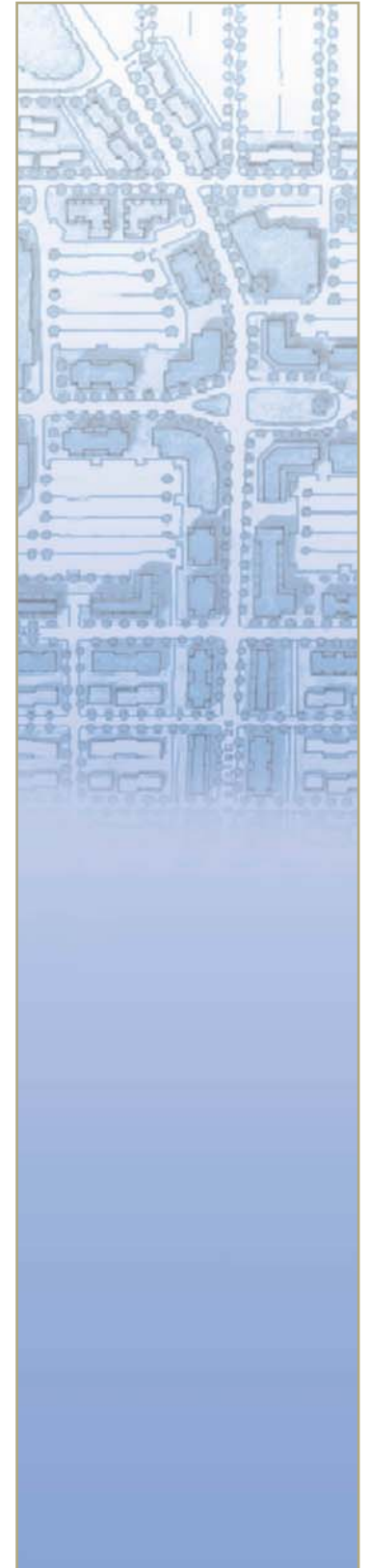
² Pickering's share of the projected regional growth is to be determined through a regional growth management strategy, which has yet to be completed.

development is sustainable. These Guidelines will help shape this infill and intensification development so that it occurs in a sustainable fashion.

For these Guidelines, greenfield development is considered to be the form of development that occurs anywhere outside of the City's built boundary. Typically greenfield development is more comprehensive (in other words it includes a wide mix of land uses) and manifests itself as new communities or major subdivisions. The Seaton lands in Central Pickering are the City's primary greenfield development area. Over the long term, this area is expected to become a complete community that is fully integrated into the existing City.

Virtually all agencies and individuals involved in the discussions surrounding the development of Central Pickering over the last several years have expressed a desire for a more sustainable approach to development. Plans for the area feature population and employment projections of approximately 70,000 residents and 35,000 jobs. This represents a significant amount of new development and translates into the creation of an entire new community abutting the City's existing built up area. The sheer size and scale of potential development in this area means that the City can capitalize on a wide range of sustainable practices that are often difficult to achieve with smaller infill projects. District energy, mixed use corridors and transit hubs are some examples.

The shape and form of long term projected growth is expected to change in the City of Pickering over the next decade. The City of Pickering will see an increase in infill development and the rise of a new community north of the existing urban area. This projected growth combined with rising environmental, social and economic concerns of residents establishes the need for a tool that promotes the practice of sustainable development.



4.0 WHAT ARE OTHER MUNICIPALITIES DOING TO ACHIEVE SUSTAINABLE COMMUNITIES?

The City of Pickering is not the first municipality to contemplate sustainable development. A number of municipalities are either requiring 'green' performance measures for all new development, or are incorporating environmental guidelines and/or performance requirements in planning policies, such as secondary plans, plans of subdivision, urban design guidelines, and zoning by laws. In Canada, this is a fairly recent trend. A few municipalities in western and central Canada have adopted green building or development guidelines for all or portions of their jurisdiction using a variety of tools. The following section highlights some of the emerging actions being taken.

4.1 BEST PRACTICES OVERVIEW

The Best Practices Overview (see **Appendix C**) provides an overview of some of the most progressive sustainable planning activities underway in the Canada. Case studies were selected based on (1) the degree of innovation, either with respect to the process or the environmental design measures being incorporated, and (2) comparability to the context of the Sustainable Development Guidelines in Pickering. In addition, three case studies are provided on innovative builders and developers that are voluntarily incorporating green development measures in new developments.

Each case study provides a brief description, highlights design features and environmental benefits, and provides information on the policy and/or implementation strategy (for municipalities) or marketing strategy (for builders/developers). The ten projects covered are:

- Sustainable City Project, Vaughan
- Sherwood Survey Secondary Plan, Eco-Tech Village, Milton
- North Oakville Secondary Plan, Oakville
- Plan of Subdivision, Stickwood Walker Property, Town of Newmarket
- Drake Landing Solar Community, Okotoks
- Southeast False Creek, Vancouver
- East Clayton, Vancouver
- Marshall Homes, Copperfield, Oshawa
- Jeffrey Homes, The Birches, Whitby
- Windmill Developments, Docksider Green, Victoria

All of the cases have the common aim of achieving a reduced environmental impact as a result of the built environment through enhanced development standards. In

most cases, developers and/or builders are voluntarily working with municipalities and environmental agencies to explore ways of incorporating green development measures. Green development measures tend to address aspects of site design that fall into the following categories:

- Land use and site selection;
- Natural heritage;
- Green building design (building envelope, orientation, indoor air quality & heating, ventilation and air conditioning, and refrigeration infrastructure);
- Energy efficiency (on or offsite renewable energy);
- Solid waste management;
- Water & wastewater;
- Stormwater management; and,
- Transportation.

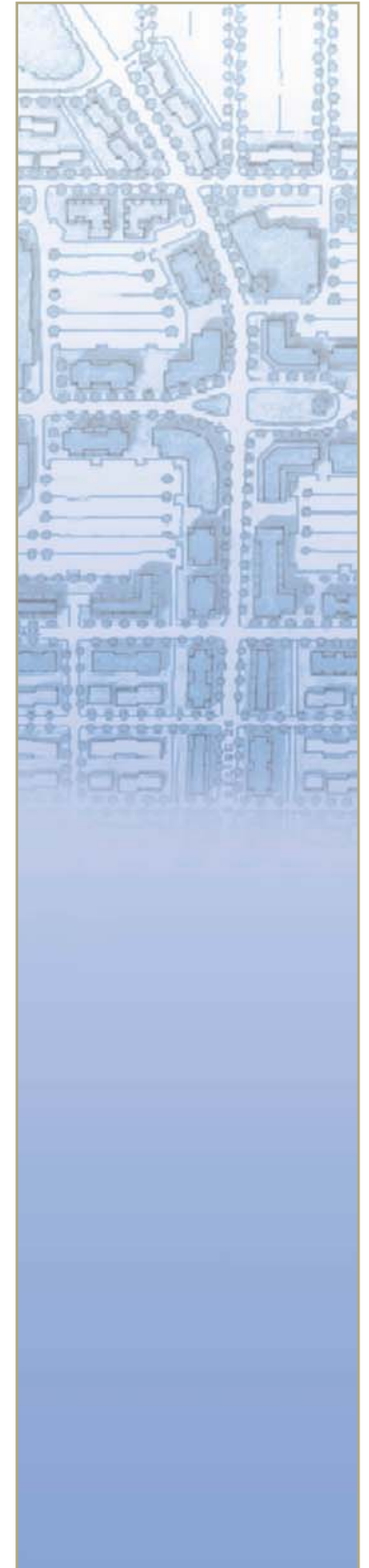
In addition to the cases outlined in **Appendix C** there are also several local initiatives of importance. These include The Town of Markham's approach to Markham Centre, The Toronto Waterfront Revitalization Corporation's Sustainability Framework and City of Toronto's Green Development Standards. These are highlighted below.

4.2 MARKHAM CENTRE

Town of Markham is using guiding principles and an advisory panel to manage the development of Markham Centre. The Markham Centre Plan adopted by the Town in 1994 and approved by the Ontario Municipal Board in 1997 establishes a broad framework to create a vibrant, mixed-use, pedestrian oriented Town Centre. That framework is now in the process of being realized in actual buildings, streets, schools and parks. The role of the Markham Centre Advisory Group is to assist the Town in reviewing and confirming the principles and objectives of the Markham Centre Plan and developing and evaluating the performance of the implementation measures. The Advisory Group consists of a broad range of stakeholders, including Town and Region staff, conservation authority staff, developers, resident groups, politicians, representatives from the business community and environmental groups. As opposed to firm, measurable criteria, the Markham approach uses the discretionary judgment of its panel members to evaluate development proposals from a sustainability perspective. The panel is concerned only with development in Markham Centre and not the whole of the municipality.

4.3 TORONTO WATERFRONT REDEVELOPMENT COMPANY'S SUSTAINABILITY FRAMEWORK

In July 2005, the Toronto Waterfront Redevelopment Company (TWRC) unveiled its sustainability framework, a document designed to guide the redevelopment of Toronto's waterfront. The framework lays out a vision of sustainability and the steps



that will be needed to achieve that vision. It moves from broad umbrella concepts to guiding principles, to desired outcomes, to documenting existing conditions, and to strategic actions, objectives and targets. Specifically the TWRC's plan includes a vision and a series of strategies and objectives that will ensure the vision is met. The framework includes specific objectives for energy efficiency, land use, transportation, air quality, human communities, cultural resources, natural heritage, water and materials and waste. The framework also includes steps for monitoring and tracking progress towards sustainability goals.

4.4 CITY OF TORONTO'S GREEN DEVELOPMENT STANDARD

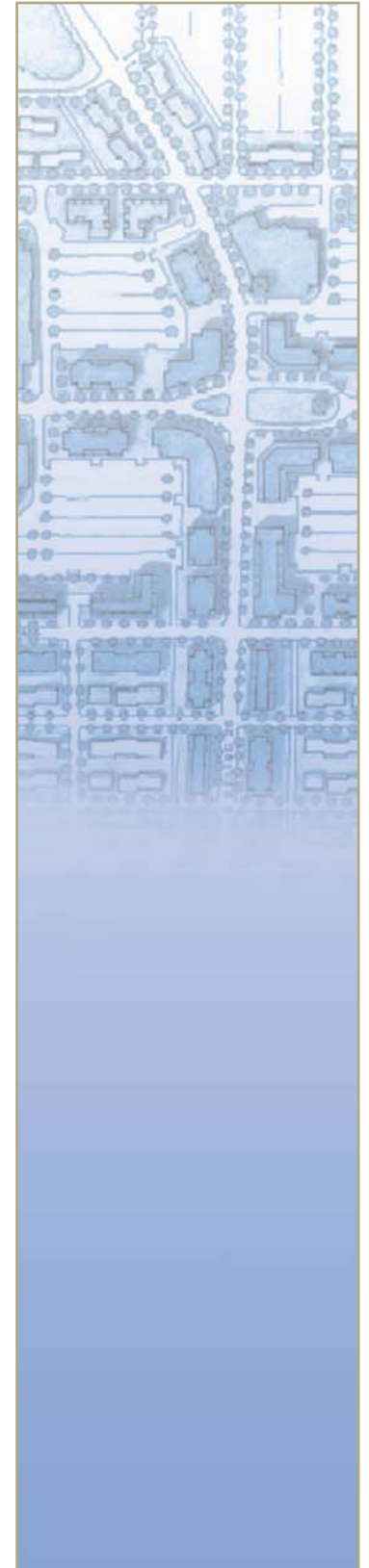
The Toronto Green Development Standard provides an integrated set of targets, principles, and practices to guide the development of City-owned facilities and to encourage sustainable development from the private sector. The Toronto Green Development Standard was created from a review of City guidelines and targets, popular "green development" rating systems and the experiences of cities from around the world. The City's guideline document falls under the category of a public sector leadership model. From a content aspect, the document covers a wide range of development aspects related to community design, including standards/guidelines for water quality and efficiency, energy efficiency, solid waste, urban forestry, wildlife habitat, light pollution and air quality.

4.5 SUMMARY OF CASE STUDIES AND BEST PRACTICES

While there may be differences in where and to what the guidelines are applied, the examples confirm that there are a number of Canadian municipalities working towards implementation of sustainable development guidelines. Common threads among the majority of the examples include the inclusion of guidelines and standards for:

- Natural heritage protection;
- Land use and site selection;
- Energy efficiency;
- Water and air quality;
- Transportation infrastructure (transit, pedestrian environment and roads);
- Municipal infrastructure design (water and wastewater, solid waste and stormwater); and,
- Urban design.

The research into each of the cases discussed above, along with stakeholder consultation, has helped to shape the specific guidelines for Pickering.



5.0 WHO HAD INPUT INTO CREATION OF THE GUIDELINES?

The following section explains the consultation activities undertaken for the development of the Sustainable Development Guidelines. The results of the consultation program are summarized in three sub sections below.

5.1 CONSULTATION WITH STAKEHOLDERS

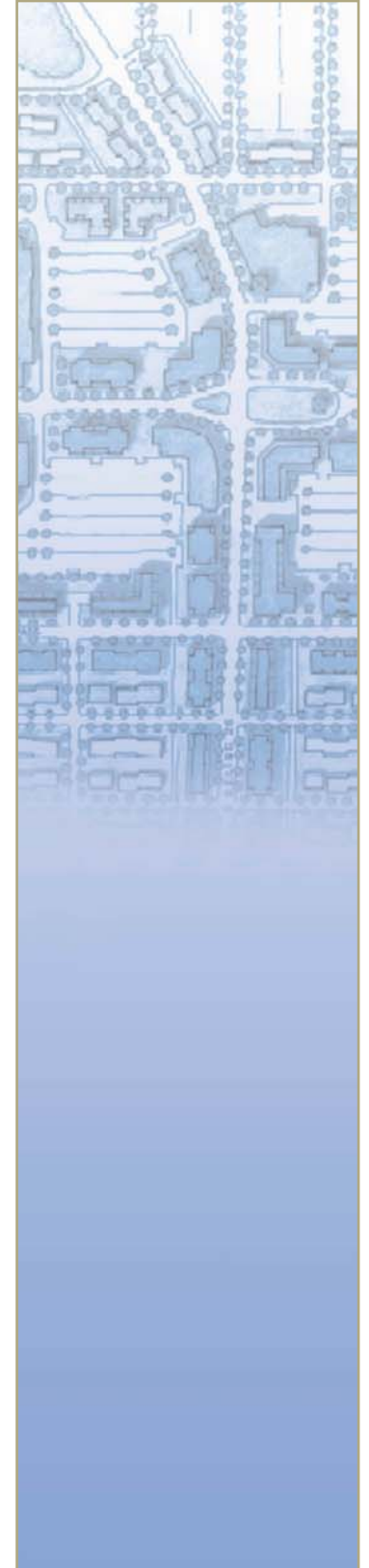
Consultation on sustainable community design began with a design charrette conducted by the City to explore different approaches to design neighbourhoods for Central Pickering in 2004. In 2005-6, two workshops were undertaken with a range of stakeholders to discuss what might be included in Sustainable Development Guidelines. Participants included representatives of environmental groups, the development community, resident associations, utilities and City and Regional staff. The first half-day workshop discussed the principles of the guidelines and the second full-day workshop discussed a proposed made-for-Pickering conceptual LEED ND-based framework in detail and provided input on each proposed measure. The second workshop group strongly endorsed the LEED-ND point based system, application of both required and optional targets, as well as the proposed structure and approach. Since these workshops, the City has consulted with staff from the Toronto Region Conservation Authority in refining and the Region of Durham in refining selected Guidelines contained in this report.

5.2 CITY OF PICKERING CONSULTATION

To ensure that the proposed Guidelines are appropriate in the Pickering context, a draft set Guidelines was prepared by the consulting team and distributed to City staff for review. Staff from the Planning and Development Department, including Planning, Building Services and Development Control, reviewed the draft Guidelines. Staff looked at the proposed required strategies and provided comments with respect to the format, content and implementation process. The applicability of the proposed targets for Pickering was reviewed and revisions were proposed.

5.3 AGENCY CONSULTATION

A series of meetings were held with the Toronto Region Conservation Authority (TRCA). The TRCA was consulted on a range of issues surrounding the guidelines, including content, format and implementation measures. A draft set of guidelines was submitted to TRCA staff who in turn provided a number of recommendations related to content, format and implementation. The majority of TRCA's input was related to the environmental protection guidelines. Section 7.0 describes future consultation for review and discussion of this report and the Sustainable Development Guidelines.



6.0 DISTRICT ENERGY

One interesting and far-reaching opportunity for sustainable infrastructure in Central Pickering is to provide energy to the homes and businesses through a district energy system. The proposed Guidelines include district energy as one optional environmental performance target. To fully explore this important option, Council authorized the SNP team to undertake additional preliminary investigations after June 2006. The results of these investigations are presented here and in **Appendix D** which is a technical pre-feasibility analysis of the potential for district energy in Central Pickering.

The broad objective of district energy is to provide heating and cooling through one or more centralized energy plants that can produce energy with high efficiency and with low environmental impacts. Most systems also have a co-generation component where electricity is generated and used to power the system and/or sold to the electricity grid. The fuel for creating heating and cooling is typically natural gas in the initial stages but can evolve into more environmentally positive and less price volatile fuels such as bio-fuels (e.g. ethanol, bio-ethanol), solid waste, waste pellets, solar or geothermal over time. This system would replace conventional heating and cooling systems (e.g. individual home furnaces and boilers/chillers for employment uses). The key advantages of such systems are the security they provide to users, the potential to ensure low-impact energy systems on a broad scale, the potential to reduce greenhouse gas emissions, the potential financial benefit to the operator through cost recovery and selling of electricity and potentially more stable costing that is comparable to conventional systems for users.

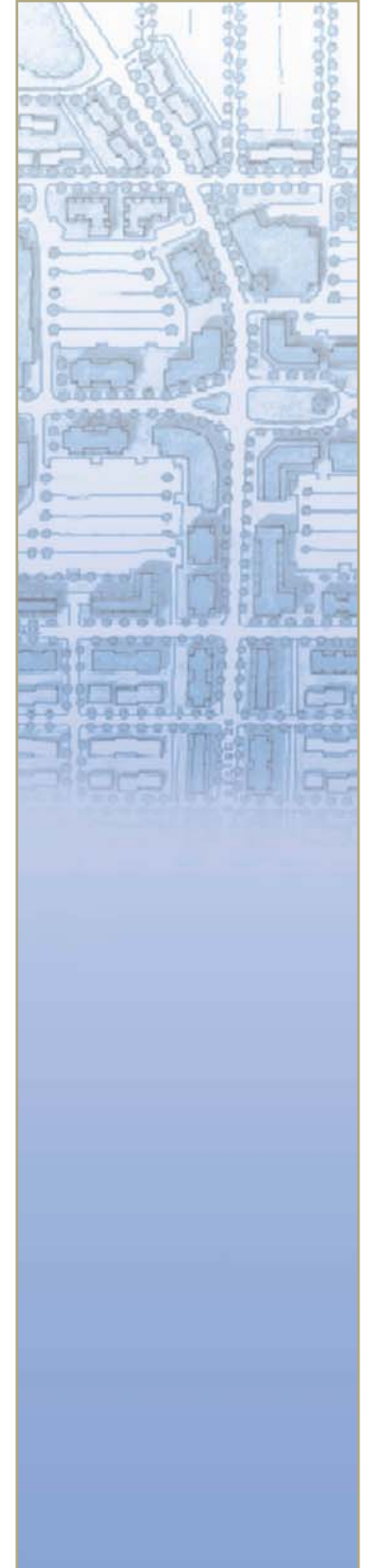
District energy is wide-spread through much of Europe and is beginning to emerge in the GTA market. Notable recent projects include Regent Park in Toronto and the Markham District Energy System which is set to provide heating and cooling for 100% of the new downtown area in Markham.

Preliminary investigations of the opportunities presented by district energy are being undertaken as part of the SNP project. To date, three meetings have taken place:

- Enbridge Gas Distribution;
- Enwave Corporation; and,
- Markham District Energy.

These meetings and the Pre-Feasibility Study, have highlighted some opportunities and constraints to district energy in Pickering and highlight the need for a more in-depth feasibility analysis outside the SNP project scope. Some of the key findings are summarized as follows:

- District Energy could be an effective way to integrate sustainability into the development of neighbourhoods planned for Central Pickering. It would integrate with renewable energy systems and allow the construction of lower cost, higher quality and more energy-efficient buildings.
- It would be reasonable to assess the feasibility of starting separate district energy systems in particular neighbourhoods. The best approach would be to include district energy feasibility studies as part of the Neighbourhood Plans.
- The recommended target market would be apartments, commercial and community buildings and stacked townhouses.
- Realization of the potential for district energy in Central Pickering will require the City to take a proactive role. Therefore, prior to the Neighbourhood Plans, basic general information, plans and policies need to be developed in order to give the City a suitable framework for the development of district energy. These include:
 - Understanding the potential benefits to the City of Pickering
 - Selecting potential energy sources
 - Developing a preliminary business plan
 - Understanding the nature of Thermal Energy Service Agreements
 - Assembling an information package for developers
 - Having an overview understanding of thermal energy metering and billing
 - Apply for funding
- The decision to implement district energy is best taken well in advance of development because retrofit will typically cost in the range of 50% more; most of the district energy infrastructure must be placed in the rights of ways along with roads, wires and pipes and the cost savings to make the program financially feasible are contingent on furnaces and boilers not being built in each building as they would for a conventional community (note that individual units would still require internal distribution systems).
- The density of residential development will be a key factor in defining the feasibility of district energy for all or part of Central Pickering or other areas;
- Single family residential is less feasible/economical for district energy.
- A full commitment by the City would be needed to pursue a district energy program.
- The key challenge to implementing district energy is not the technology but rather launching the organizational will and structure to plan, manage and operate a district energy system.
- Some public operators believe that there are significant financial benefits to the City of planning and running its own system in their circumstance.
- Private partners are available to assist the City in investigating the feasibility and financial viability of district energy as well as to partner in implementation



of the program. However, taking on partners diminishes the independence and “public” focus of the initiative (e.g. a private partner may be more interested in the bottom line and less interested in environmental improvements or comprehensive application).

- Financial support is available through provincial and federal agencies to support sustainable development and energy efficient development strategies for municipalities.
- The nature of the employment uses will influence the feasibility of district energy (e.g. projects with higher employee and energy needs are preferable to warehousing, low density employment uses).
- Typically, the district energy system is anchored with one or more large energy users (e.g. IBM in Markham, large tracts of dense residential including highrise buildings in Regent Park). This provides a guaranteed customer base upon which to invest capital for infrastructure.

7.0 WHAT HAPPENS NEXT?

At this point, the Guidelines are still considered to be in draft form. The following items will also need to be completed before the Guidelines can be finalized and implemented:

- In early 2007, the City will present the draft Guidelines document to Council and to various stakeholders to obtain feedback on the criteria, targets and implementation process;
- Testing of the Guidelines should be conducted (e.g. a pilot project for areas of proposed development);
- Conducting a feasibility study for district energy for Central Pickering and development of an administrative framework;
- Preparing the detailed implementation strategy, appropriate amendments to the Official Plan, and updating by-laws and City Standards; and
- Staff training on sustainable development and the Guidelines.

Upon completion of the above items, this guideline document will be updated as necessary.

