SUSTAINABLE WINNIPEG:
A Comprehensive Environmental Strategy

Prepared by the Winnipeg Civic Environmental Committee

For the City of Winnipeg's Executive Policy Committee, February 2004

TABLE OF CONTENTS

Letter from Chair of Civic Environmental Committee iii
Executive Summary iv

Introduction
Mandate 5
Consultation and Communication 5
Environmental Policy Solutions 6
Challenges 6
Implementation 6
Setting Targets: A Critical & Necessary Task 6
Key Principles 6
Vision for a Sustainable Winnipeg 7

Decision Making and Management
1.1 Sustainable Governance and Corporate Management 8
1.2 Fiscal Policy and Sustainable Budgeting 9
1.3 Partnerships 10
1.4 Environmental Education 11

Climate Change and Air Quality
2.1 Climate Change 12
2.2 Air Quality 13

UrbanEnergy
3.1 Energy Conservation 14
3.2 Sustainable Energy 15

Sustainable Land Use and Development
4.1 Guiding Land Use Through Sustainable Urban Growth 16
4.2 Parks, Open Spaces and Natural Areas 17
4.3 Developing Brownfield Sites 18
4.4 Trails and Greenways 19
4.5 Green Building 20
4.6 Managing the Urban Forest 21

Sustainable Transportation
5.1 Transportation Demand Management 22
5.2 Public Transportation 23
5.3 Active Transportation 24

Solid Waste and Materials Management
6.1 Household Solid and Hazardous Waste Minimization 25
6.2 Industrial Commercial and Institutional (ICI) Waste Minimization 26

Sustainable Water and Wastewater Management
7.1 Water Management and Conservation 27
7.2 Wastewater Management 28
7.3 Waterways, Shoreline Habitat and Surface Water Runoff 29

Pesticides in the Urban Environment
8.1 Insecticides and Larvicides 30
8.2 Herbicides and Fungicides 31

Glossary 32
Acknowledgements and Contributors 37
Bibliography 39

Dear Citizens,

It is with great pride and pleasure that the Civic Environmental Committee presents, to the Council and citizens of Winnipeg, *Sustainable Winnipeg: a Comprehensive Environmental Strategy.* This document is designed to make our home more environmentally, economically, and socially sustainable. Through extensive research and consultation we believe that we have produced a document that accurately reflects the vision, beliefs, and direction of Winnipeg's administration and citizens. The completion of this overarching strategy, focusing on environmental and economic sustainability for Winnipeg, represents a landmark in Council's forward thinking efforts to a long-term sustainable plan for Winnipeg.

It is our hope that this document will form the basis for all environmental programs at the City of Winnipeg and that it will provide a base reference for our administration, citizens, and visitors as they live, work, and play in our city. The strategy should be seen as an extension of *Plan Winnipeg 2020*, the vision document for the City of Winnipeg. Within *Sustainable Winnipeg: a Comprehensive Environmental Strategy* we have addressed the specific areas of influence that prioritize our built and natural environments and speak to the importance of sustainability.

This document is an excellent first step toward creating a more stable and progressive city for future generations of Winnipeggers. Our responsibility now is to develop a comprehensive priority plan. This plan will address specific issues and outline the ways in which we can incorporate socially, financially, and environmentally sustainable actions into our city, community, and commercial operations.

I send sincere thanks to our City administration and to the citizens of Winnipeg for their feedback, support, and hard work. As a result of the commitment to this document, Winnipeg will be a greener and more sustainable place to live.



Councillor Gord Steeves

Chair, Civic Environmental Committee

EXECUTIVE SUMMARY

We all want an economically, socially, and environmentally robust city. We have learned that the future of our home depends on strengthening and diversifying all parts of our civic framework, including fiscal revenue. If we want to protect and nurture our vibrant and healthy communities we must consider the long-term impact of our decisions. Our economic and social health depends not only on the diversity and dynamism of our economy, but also on our physical environment.

A city's clean environment attracts short term visitors such as tourists, but also sends a strong message to investors and the employees they wish to attract and retain. A city that demonstrates its concern for its rivers, trees, air, and its citizens, will have the competitive edge needed for stability in the twenty-first century. Furthermore, as cities around the world scramble to corner the environmental technologies sector they are also illustrating an acute awareness of the long term fiscal value attached to protecting their environmental future.

Through the creation of the Civic Environmental Committee (CEC) in 2001, Winnipeg's City Councillors took a laudable and crucial first step in protecting their City's future. By assigning the CEC the task of this strategy, Council showed its appreciation and concern for the environment.

The Civic Environmental Committee applauds City Council for directing them to produce this document. The *Draft Comprehensive Environmental Strategy* was released in May 2003 for public consultation. A series of town hall sessions were held to stimulate discussion on several issues in the report, to receive public feedback on the document, and to establish priorities. In addition, stakeholders were invited to submit comments and several met directly with the Environmental Coordinator to discuss the strategy. In July 2003, Mayor Glen Murray and Councillor Gord Steeves, Chair of the Civic Environmental Committee, answered questions and read public concerns during an e-chat session.

Environmental issues are often controversial. In producing *Sustainable Winnipeg: a Comprehensive Environmental Strategy*, the Civic Environmental Committee aims to find a balanced approach to sustainability in the city. Through the referral of the document to the administration, the Committee will have provided background on key environmental issues that will, in turn, guide the development of environmental policy by the City's administration.

Cities require a great amount of energy and water and produce an enormous amount of waste. This document reflects many of the areas of citizen concern. Furthermore, the strategy documents the City of Winnipeg's current policy on many interconnected issues including:

1. Decision Making and Management
2. Climate Change and Air Quality
3. Urban Energy
4. Sustainable Land Use and Development
5. Sustainable Transportation
6. Solid Waste and Materials Management
7. Sustainable Water and Wastewater Management
8. Pesticides in the Urban Environment

Cities across Canada have established Offices of the Environment and produced long-range plans for addressing many of the key issues in the strategy. By doing so they are demonstrating an acknowledgement of the social and economic dependence we have on our environment and the extent to which a healthy and robust environment depends on us.

In Winnipeg, civic departments have been focusing on many of these issues for several years. They have developed excellent strategies and programs to mediate environmental concerns while providing a high level of public education. Together with Winnipeg's many Environmental Non-Governmental Organizations (ENGOs), the City has made significant and positive steps in dealing with Winnipeg's environment. However, the Committee recommends that the issues illustrated in this document be seen as interdependent. Land-use decisions affect transportation costs and planning. Transportation choices affect energy use and climate change. Climate change affects our water management. The protection of our urban forest can mediate climate change and the diverse ecosystems that depend on our waterways, which are affected by pesticide and herbicide use.

Addressing these interconnected issues is not going to be an easy task. It will require our constant attention, but if we focus on making our city sustainable, the rewards will be enjoyed by generations of Winnipeggers.

MANDATE

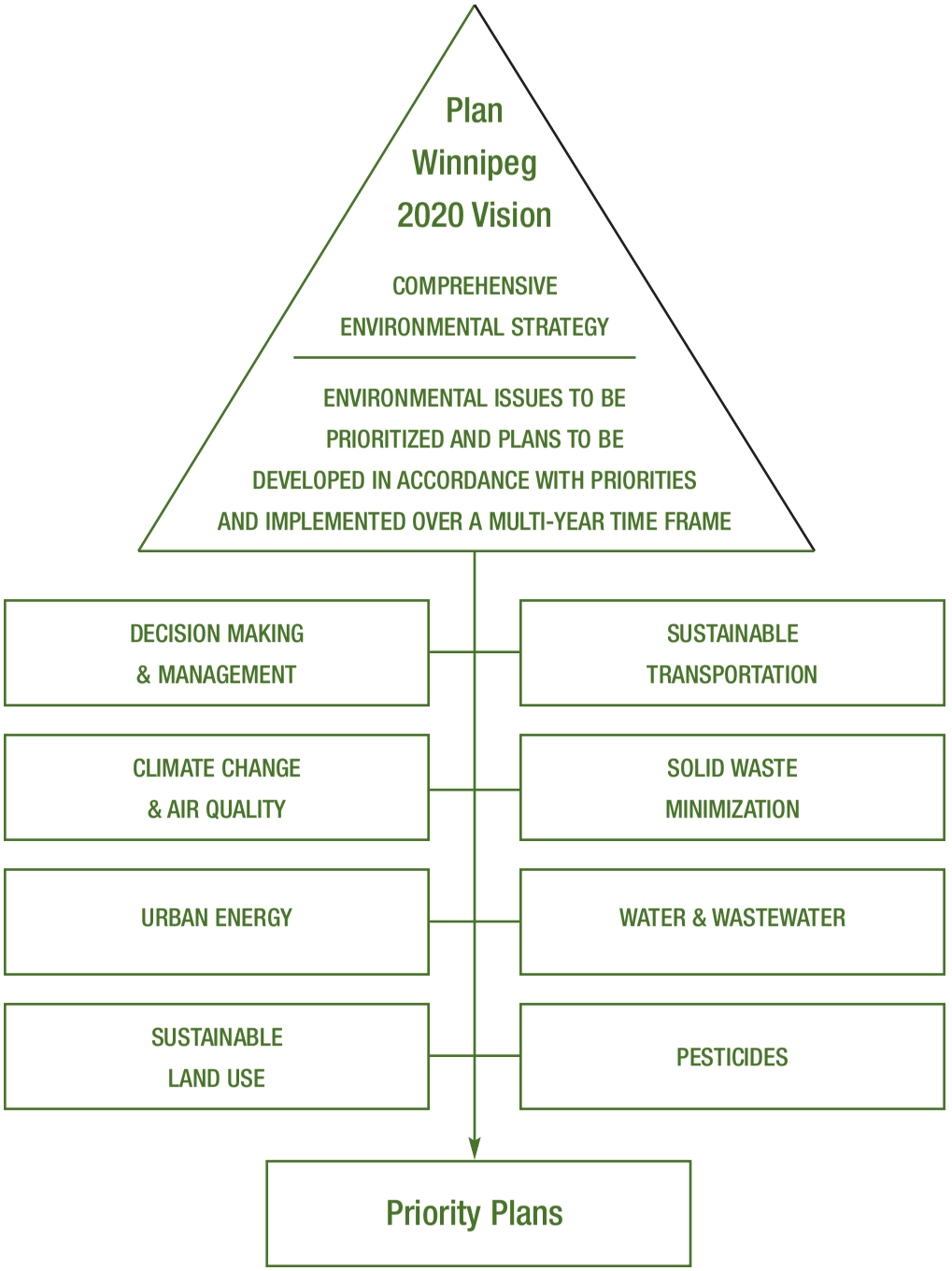
Sustainability is identified in *Plan Winnipeg 2020* as the first of six principles intended to address the challenges facing our city. Sustainability is described as "making certain that the choices available for future generations are not impaired by decisions made today…and that long term goals are more important than short term gains."[i]

Formed in December of 2001, the Civic Environmental Committee (CEC) is a citizen advisory committee that provides advice and reports to Council on environmental and sustainable development issues. The committee reports to Council, through the Executive Policy Committee and, where appropriate, through other Standing Committees. This reporting structure most appropriately addresses the need to coordinate many complex and crosscutting environmental issues across council committees and individual administrative departments.

As one of its first tasks, the CEC was directed to develop a long-term *Comprehensive Environmental Strategy* for the City of Winnipeg. The strategy has identified key environmental challenges facing Winnipeg and recommends long term policy directions that will be addressed in greater detail through the development of priority plans on specific environmental issues.

CONSULTATION AND COMMUNICATION

In developing the strategy, many community stakeholder groups were consulted. Winnipeggers were provided with a draft strategy that sought input into its content and recommendations. Department directors and managers at the City provided extensive feedback on the strategy through the Internal Administrative Coordinating Committee (IACC). External stakeholder groups, including the other levels of government, Non-Governmental Organizations (NGOs), business groups, and community organizations, were also consulted in the development of this strategy. In addition, public town halls and a live web chat session were held to allow members of the public an opportunity to voice their opinions on the strategy.



ENVIRONMENTAL POLICY SOLUTIONS

The recommendations in this document have been presented to identify policy and program options to find long-term solutions to environmental issues. Assembled from research and best practice scans of other municipalities across North America, the recommendations have been developed based on input from the City administration, the public, and key stakeholders in Winnipeg. Furthermore, they present Winnipeggers with a full range of initiatives that can be applied to achieve sustainable environmental solutions over the long-term.

CHALLENGES

The environmental initiatives currently being undertaken by the City departments must not be overlooked. Many civic departments are involved in projects that aim to increase the sustainability of their operations. Despite intense fiscal pressures, department directors, managers, and employees must be commended for their lead role in working toward environmental sustainability.

The City of Winnipeg is responsible for operating services that influence both the environment and human health. However, it is not only our policy decisions, but also our consumer choices, that have an effect on the quality of our air, our land and our water. These decisions, in turn, affect the overall quality of life in Winnipeg. The challenge is to provide Winnipeg's citizens, administrators, and Council members with the proper tools to address the issue of environmental sustainability in proactive and creative ways.

It is essential that the long-term environmental implications of public policy are properly accounted for and that future generations are not burdened by the policy decisions made today. This objective will not be easy to achieve. Lack of awareness and understanding on sustainability issues combined with priorities that emphasize short-term gains over long-term sustainability are significant institutional barriers. These barriers must be addressed. Public education must be a priority. The messages that we are sending to our citizens must be changed. Our challenge, as a city, is to move away from policies that promote unsustainable practices and toward policies that promote sustainability within readily achievable, financially supportable, and realistic parameters.

IMPLEMENTATION

Sustainable Winnipeg: a Comprehensive Environmental Strategy is designed to be consistent with the principles established in *Plan Winnipeg 2020*, which were approved under the *Plan Winnipeg* by-law. *Plan Winnipeg* is City Council's guide to "setting priorities and making decisions that address the broad physical, social, economic and environmental conditions that affect our city." In creating a priority plan the civic administration will be committing to a long-term process of enhancing environmental decision-making and management within City operations while encouraging sustainable behaviour among citizens. For change to be effective, environmental initiatives must be well planned, be given adequate resources for implementation, and be in accordance with public and Council priorities. The implementation of a priority plan, containing policies on the specific environmental issues listed within the environmental strategy, is expected to span the next several years. It will need to address issues around research, budgeting and resources, departmental roles and responsibilities, and other critical factors for implementation.

The plans, strategies, and implementations associated with the *Comprehensive Environmental Strategy* should not, in any way, limit individual City of Winnipeg departments from taking initiative and promoting opportunities in the absence of a priority plan. The Committee encourages the City's administration to use the strategy as a framework to guide financially viable, long-term goals.

SETTING TARGETS: A CRITICAL & NECESSARY TASK

The issue of setting real and achievable targets was often raised by those consulted, including key stakeholders, the City administration, and citizens. The Committee recommends to the administration that any successful long-term strategy will require the development of key targets and indicators to measure progress toward goals. In addition, the Committee advises the administration that it is essential to commit to targets. Without targets a priority plan will have no meaning. However, failing to achieve targets should not be seen as a failure to achieve change and improve environmental quality by the administration. The committee recognizes the complexity of some of these environmental issues with respect to implementation and knows it will be difficult in many instances to make significant progress quickly. Nevertheless, targets give everyone a goal and let Winnipeggers know that Council is committed and serious about taking action.

Winnipeggers will again want to be involved in the development of these targets and further consultation will be necessary. Such an approach will allow for a "made in Winnipeg" solution. The Committee has carefully considered the integration of targets and the basis for their implementation through a priority plan and feels strongly that it has provided the administration with a very manageable and appropriate framework.

KEY PRINCIPLES

Each section of this document lists strategies that the City of Winnipeg could use to make its own operations more sustainable and help foster sustainable behaviour among citizens. These strategies are linked by the following Key Principles:

FISCAL AND ENVIRONMENTAL SUSTAINABILITY:

Aligning fiscal policy tools with other policy tools that affect the environment so that economic and environmental objectives can be achieved simultaneously.

THE PRECAUTIONARY PRINCIPLE:

Taking into account that when an activity raises significant potential threats to human health or the environment, actions that err on the side of precaution should be taken even if direct cause and effect relationships are not fully established scientifically; such an approach should include an assessment of costs and benefits (environmental, health, social, and fiscal) of action or inaction.

POLLUTER PAY:

Requiring that users of publicly provided services are responsible for the full cost of these services, including the costs to the environment; a result being that environmentally responsible citizens do not subsidize unsustainable practices of others.

INTERGENERATIONAL EQUITY:

Ensuring that the policies and decisions made today do not have adverse effects on, nor compromise, the ability of future generations to succeed.

DEMAND SIDE MANAGEMENT:

Implementing policies or measures that manage or influence the demand for a service or resource with an emphasis on decreasing the demand for services or the conservation of resources rather than increasing supply.

CO-OPERATION AND COMMUNITY EMPOWERMENT:

Ensuring that communities and stakeholders have opportunities to participate in the decision-making process, providing tools and training that will empower communities to develop community-based environmental programs, and cooperating with other levels of government on inter-jurisdictional environmental issues.

LEADING BY EXAMPLE THROUGH INNOVATION:

Utilizing municipal facilities and operations as public education tools that showcase the fiscal and environmental benefits of sustainable operations with the objective of inspiring responsible environmental choices within other organizations.

VISION FOR A SUSTAINABLE WINNIPEG

Winnipeg will embrace its character as a prairie city, integrating environmental policy with economic objectives to become one of the world's healthiest urban centres. The civic administration will set targets for sustainability and will exercise due diligence in achieving these objectives. Winnipeg will work with other levels of government to ensure a coordinated approach to addressing urban environmental concerns. Winnipeg's actions will be derived from decisions that reflect locally based solutions informed by the global nature of our environment. City Council and the administration will adopt a sustainable decision-making process that will be inclusive, comprehensive, and financially sustainable.

Winnipeg will become a model for community-based programming by providing citizens with educational programs, environmental outreach services and opportunities to participate in innovative environmental programs. Communities will develop local plans and work toward specific targets. Communities will be rewarded for their efforts to save energy, protect natural areas, dramatically reduce the use of pesticides and develop active transportation networks. Neighborhoods will develop as social and community hubs, becoming models for ecological community development and Smart Growth.

1–1 SUSTAINABLE GOVERNANCE AND CORPORATE MANAGEMENT

WHAT IS THE ISSUE?

City policies and management decisions have significant implications for environmental quality. In the past, decisions have sometimes been made in isolation of potential environmental impacts. Though unintentional, some government programs encourage unsustainable behaviour, while penalizing those who adopt sustainable practices.

WHERE ARE WE NOW?

Winnipeg is well positioned to embrace a framework of governance that is capable of developing policies based on principles as outlined in the introduction to this document. In adopting the *Plan Winnipeg 2020* document, Council recognized the need to enhance the sustainability of our municipal operations, and citizens voiced their desire for a "shift from attempting to manage pollution to focusing on a more pro-active and preventative approach."

POLICY OBJECTIVE

The City of Winnipeg will develop and implement a comprehensive framework for sustainable decision-making within its municipal government and corporate administration.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on sustainable governance and corporate management for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for succes.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Ensuring fiscal and environmental sustainability within City operations;
b. Anticipating and preventing environmental problems before they occur;
c. Adopting a code of corporate environmental responsibility and an environmental code of practice for City employees, and ensuring that staff members have adequate environmental education and training;
d. Exploring the implementation of environmental audit criteria and a corporate-wide environmental management system based on an internationally recognized standard;
e. Requiring that the principle of Demand Side Management, an approach emphasizing conservation over infrastructure expansion, is carried out to the fullest extent possible;
f. Focusing policies toward the objective of Smart Growth;
g. Integrating innovative environmental policies and technologies into City operations;
h. Developing structures of governance that encourage sustainable decision-making and innovation among elected representatives; and
i. Documenting and promoting the City's progress towards meeting its corporate sustainability objectives.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

j. Ensuring that policies do not compromise community sustainability objectives;
k. Educating citizens on the tools available to them and empowering communities to use resources efficiently and minimize pollution;
l. Advancing the notion of polluter pay, so that environmentally responsible citizens do not subsidize the unsustainable practices of others;
m. Ensuring that policies are socially equitable and do not compromise the success of future generations;
n. Establishing a municipal environmental evaluation process for infrastructure and development proposals that incorporates demand-side management strategies;
o. Providing citizens and communities with the education and the tools to develop community-based environmental programs geared towards reducing the reliance on municipal environmental services;
p. Cooperating with other levels of government on municipal environmental issues; and
q. Establishing a City of Winnipeg environmental awards program to recognize citizen, institutional, and corporate contributions to sustainability.

WHAT IS THE ISSUE?

Fiscal policy is very important in supporting environmental stewardship and sustainability. Fiscal policy determines an organization's financial systems and practices including budgeting, reporting, financing, purchasing, risk management, and decision-support.

Recent experience makes clear that financial planning must be integrated with environmental priorities to provide a sustainable future. The challenge, therefore, is not only balancing environmental priorities but also finding a balance among economic outcomes, equity (for both current and future generations), affordability and risk. Often environmentally responsible individuals and organizations subsidize the non-sustainable behaviour of others. When this occurs, the result is a "perverse subsidy." Fiscal policies should raise corporate and public awareness of the real environmental costs associated with unsustainable activities. Fiscal policy, through green budgets and other similar tools, can provide a means to persuade producers to increase energy efficiency, utilize environmentally friendly inputs and foster sustainable behaviour.

An approach that integrates financial, and economic, planning is consistent with the City's financial planning framework. As Mayor Glen Murray observed in his introduction to the City's Financial Management Plan (adopted by Council, April 25, 2001): "The City also recognizes that maintaining a high quality of life requires close attention to our natural and built environments. The City is therefore committed to protecting and enhancing our community's environment through responsible and sustainable decision-making and operations. Moreover, the City acknowledges the need and welcomes the challenge and opportunity of applying and integrating sustainable development concepts into its policies and procedures, including those related to managing growth and sprawl and to land use and transportation planning."[ii]

WHERE ARE WE NOW?

Under the Province of Manitoba's new Sustainable Development Act, all levels of government must develop a sustainable budgeting checklist and green procurement policies within the next several years. The City of Winnipeg, like most public sector organizations, has limited financial resources. Financial sustainability is, and will continue to be, a major issue requiring significant focus and attention. The nation's large urban centres are currently pursuing a New Deal for municipalities, seeking additional revenue sources/authorities from the Federal and Provincial levels of government. Such authorities would allow the City to develop a financial system that is based on consumption, thus allowing for more sustainable financing of services. In the meantime, the City has made significant positive progress towards financial sustainability. These efforts are summarized in the City's Financial Management Plan, approved by Council in 2001.

In a recent poll commissioned by the City of Winnipeg Civic Environmental Committee, 77% of those polled indicated that the City should spend more on the environment. In a separate question, tax shifting was indicated as being the most preferred means of financing environmental improvements.

POLICY OBJECTIVE

The City of Winnipeg will explore the use fiscal tools that foster sustainable behaviour within its organization, among citizens, corporations, business, and industry.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Fiscal Policy and Sustainable Budgeting for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Examining perverse subsidies resulting from existing municipal budgets and reporting on the environmental implications of existing fiscal policies;

b. Educating City employees on green procurement;

c. Developing a protocol for full-cost accounting, and working towards fiscal tools that promote sustainability, spur innovation and create employment;

d. Ensuring that budgets protect the environment, enhance our economy, spur innovation, promote energy efficiency, and encourage conservation;

e. Ensuring social and intergenerational equity, that the move toward green budgeting is equitable and improve the effectiveness of municipal fiscal systems; and

f. Cooperating with other levels of government to ensure that provincial and federal policies do not compromise municipal green budget policies.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

g. Shifting taxes to promote equity and environmental sustainability;

h. Educating citizens on the concept of green budgeting, including tax shifting, perverse subsidies, full-cost accounting and polluter-pay ; and

i. Ensuring that green budgeting tools are fair and equitable among citizens and to future generations.

1-3 PARTNERSHIPS

WHAT IS THE ISSUE?

Environment in itself is not a municipal jurisdiction. Environmental regulation is primarily an interjurisidictional matter that requires cooperation at the local, regional, national, and international level. A large number of environmental impacts are, however, associated with urban activities and can be influenced by actions taken by municipal governments. Winnipeg's role in addressing these issues will vary depending on the complexity and level of impact, as well as regulatory requirements but they are rarely limited to urban boundaries and often involve more than one institution or organization. This level of regulatory complexity suggests that successful environmental policies require partnerships between and among all levels of government and all community stakeholders.

The Committee also heard from the business community, through the Winnipeg Chamber of Commerce and the Manitoba Environmental Industries Association. It is clear that Winnipeg's business community represents a very strategic and willing partner who recognizes that a healthy environment is good for the long-term economic well being of Winnipeg. Business can assist in providing direction through priority planning and can also offer innovative solutions for implementation. Partnering will be needed to ensure that the business community is involved and active in future environmental initiatives.

WHERE ARE WE NOW?

One of Winnipeg's strengths comes from partnerships that the City has fostered with the Provincial and Federal governments, and neighbouring municipalities. Furthermore, Winnipeg hosts numerous national and international environmental institutions including the International Institute for Sustainable Development (IISD) and the Canadian Council for Ministers of the Environment (CCME). Winnipeg is also home to many active community-based environmental organizations such as the Manitoba EcoNetwork and Resource Conservation Manitoba. Frequent public workshops and information sessions provide a venue for our citizens, businesses and non-governmental organizations to provide input on matters concerning our environment. In the November 2002 environmental poll, Winnipeg's citizens expressed a very strong preference for the protection of the environment. In addition, their responses demonstrated a desire to participate in finding sustainable solutions to environmental concerns.

The private sector, and in particular the environmental industries, represent a tremendous growth sector in the local economy. Collaboration and promotion of these industries will ensure greater long- term sustainability of Winnipeg's economy. This sector of the economy has the potential to create national and international recognition for Winnipeg. Support could take the shape of more inter-organizational communication and the sharing of resources and staff. Forming these alliances would promote connectivity and a greater understanding of the structural organization and functioning of both the civic administration and local NGOs.

POLICY OBJECTIVE

The City of Winnipeg will continue to consult with and seek strategic partnerships in environmental programming from citizens, other levels of government, NGOs, and corporations.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Partnerships for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Identifying key environmental partnership opportunities and ensuring that all stakeholders are consulted on decisions regarding the environment;

b. Working with the other levels of government to coordinate policy and priorities on the environment; and

c. Promoting cooperation among City departments on environmental initiatives within the City's corporate plan.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

d. Working cooperatively with other levels of government, community groups, and the local environmental industries to support neighbourhood environmental programs;

e. Partnering with local stakeholder groups on community-based environmental initiatives;

f. Hosting educational forums and events that promote environmental and sustainable development; and

g. Working with stakeholders to develop a community environmental forum to share information and identify potential partnering opportunities.

WHAT IS THE ISSUE?

Environmental education is the key to ensuring the success of the policy objectives outlined in this strategy. There are many long-term advantages of public education programs supported by all levels of government and local community groups. The interrelatedness of environmental issues is often clarified through education and community outreach. To ensure that ideas and actions are truly sustained citizens, civic employees, and corporations must be engaged.

If Winnipeg is to fully address the opportunities that public education can provide, there is a need for a commitment to a comprehensive corporate and community environmental education priority plan, combining City initiatives with the community education programs and informing citizens of their options. A comprehensive environmental education program will allow Winnipeggers to actively participate in decision-making and follow the progress of their city towards greater fiscal and environmental sustainability.

WHERE ARE WE NOW?

The City of Winnipeg currently initiates and supports a number of education programs. Issues such as climate change, energy conservation, water conservation, waste minimization and natural areas are addressed by the ongoing environmental outreach initiatives. The City's current campaigns target individual residences, and employ television, radio, newspaper, and telephone book advertising. In addition, many campaigns are promoted by displays at public events. For example, the City promotes a variety of waste minimization activities including: Blue Box, Apartment, and Office Paper recycling programs. The Fall Leaf Collection Depots and Composting Program, Christmas Tree Collection and Chipping program, backyard composting, and grass recycling programs have also been successful and were well promoted.

The City has partnered with Resource Conservation Manitoba, the Fort Whyte Centre, and the Manitoba Product Stewardship Corporation on several educational efforts. Slow the Flow was developed by the City of Winnipeg Water Conservation Team in1992 and is currently administered by the Fort Whyte Centre. The initiative aims to provide long-term water conservation solutions. The Manitoba Association for Resource Recovery Corporation and the Tire Stewardship Corporation have been engaged in initiatives at the Brady Landfill Site to encourage diversion of recyclable materials. The City has also been a supporter of Manitoba EcoNetwork's Organic Lawn Care Project since its inception in 2000

Public works, through the Naturalist Services Branch, offers several longstanding educational programs. Activities take place at various nature parks. In particular, the Living Prairie Museum's Tall Grass Prairie connects both Winnipeggers and visitors to rare and sensitive indigenous prairie habitat.

POLICY OBJECTIVE

The City of Winnipeg will increase environmental education programs and work towards the development of a comprehensive corporate and community environmental education program.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Environmental Education for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Identifying key environmental education and training requirements and opportunities;

b. Partnering with local ENGOs, professional organizations, and other levels of government to coordinate policy and priorities on environmental education;

c. Promoting cooperation among City departments on environmental education initiatives within the City's corporate plan;

d. Producing an environmental code of practice for all City employees; and

e. Encouraging employee participation and education through newsletters, a lunch time lecture series, additional training programs and awards programs.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

f. Developing a comprehensive environmental education program by appointing an Environmental Education Coordinator to work with key stakeholders and community groups;

g. Working cooperatively with other levels of government and professional organizations to support neighbourhood environmental education programs;

h. Partnering with local stakeholder groups on community-based environmental education initiatives;

i. Hosting educational forums and events that promote environmental education;

j. Collaborating with local industries to initiate demonstration projects;

k. Producing an environmental resource manual and increasing on-line environmental content on the City website;

l. Educating the public on the value of a biologically diverse urban landscape;

m. Providing public education on naturalization techniques;

n. Work with school boards and other local organizations that are interested in advancing environmental education; and

o. Conducting more citizen surveys to assess levels of concern and assess issues to target with educational campaigns.

2-1 CLIMATE CHANGE

WHAT IS THE ISSUE?

Climate change is the result of the accumulation of pollutants and greenhouse gases (GHGs) in the atmosphere. It is recognized as one of our most serious global environmental problems. Concentrations of population, wealth, infrastructure, and vehicles make cities highly susceptible to the effects of climate change. Important climate impact areas include water resources, infrastructure, economic performance, energy, parks, recreation, pests, transportation, and health. Predicted temperature changes will result in severely altered weather patterns. Spring will arrive earlier with an increased risk of flooding. Summer temperatures will be hotter and precipitation levels will decline. These shifts will increase the risk of forest fires and insect outbreaks. Lower water volumes could jeopardize water quality in the summer. Conversely, increased surface runoff from intense rain events could potentially overload the City's combined sewer overflows.

The recent ratification of the Kyoto protocol by the Government of Canada will require the City of Winnipeg to begin adopting and addressing policies and programs that can have a positive contribution to meeting our national commitments. The positive results of proactive climate change policies have the potential to be felt locally within a very short period of time. For example, sustainable urban planning, design, and utilities management policies will save public spending in transportation, health, education and other services. These proactive policies will also serve to reduce greenhouse gas emissions, thereby addressing the issue of climate change.

WHERE ARE WE NOW?

The Manitoba Climate Change Task Force predicts that the average annual temperature in Manitoba will increase 4-6°C by the end of the century with an average increase of 5-8°C during winters. Winnipeggers produce 8 tonnes of greenhouse gases per capita per year. The city, as a whole, generates 5.2 million tonnes annually. Winnipeg City departments including Transportation, Water and Waste, Solid Waste, Planning Property and Development, Public Works, and Community Services are undertaking initiatives that will lead to lowering the City's corporate emissions. In 1998 the City of Winnipeg became a member of the Partners for Climate Protection Program (PCP) and has completed the first stage of the organization's five-stage program. The PCP allows municipalities to model their emissions so that emissions can be measured and monitored over time to report on trends in increasing or decreasing emissions.

In the November 2002 opinion poll, commissioned by the City of Winnipeg Civic Environmental Committee, 64% of individuals polled indicated that they could have a positive impact on limiting their contribution to global climate change. In a separate question, 42% indicated that they are more concerned about climate change today than they were two years ago.

POLICY OBJECTIVE

The City of Winnipeg will become a leader in developing clear policies towards reducing greenhouse gas emissions from its own operations while providing the tools to empower citizens and communities to do the same.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Climate Change for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Ensuring that GHG reductions are integrated into policy and decision making;
b. Meeting local emissions targets as determined by the Partners For Climate Protection program;
c. Partnering with Federal departments to meet the City's commitment to the Kyoto Protocol;
d. Reducing the GHG emissions in City operations through demand-side management;
e. Determining the adverse effects of climate change on City capital and operations while minimizing adverse effects;
f. Reducing greenhouse gases from City buildings and operations; and
g. Educating City employees on City policies directed toward reducing corporate greenhouse gas emissions.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

h. Educating citizens on climate change and policies directed towards reducing community greenhouse gas emissions;
i. Empowering citizens and communities to reduce green house gases by providing them with the tools to develop community based reductions programs;
j. Using the polluter pay principle as a method reducing greenhouse gases;
k. Cooperating with other levels of government and with NGOs in providing community based climate change programs; and
l. Contributing support to community alternative transportation initiatives.

WHAT IS THE ISSUE?

Winnipeg generally enjoys excellent air quality compared to other Canadian cities of similar size. Air quality concerns are often localized, such as the presence of odours or other air pollutants. Sources of localized and other airborne pollutants include industry, vehicles, stubble burning on farms, and human-produced substances that are released into the atmosphere.

Automobiles contribute significantly to air pollution. Pollutants such as carbon monoxide, nitrogen oxides, and volatile hydrocarbons come from vehicle exhaust. Smog is the most serious by-product created by airborne pollutants in many cities today.

Cities have a considerable effect on stratospheric air quality and climate change. For example, the integrity of the ozone layer (stratospheric ozone) is compromised by the use of ozone depleting substances. Likewise, climate change is the result of the accumulation of greenhouse gases in the atmosphere resulting in an increasingly variable climate.

WHERE ARE WE NOW?

Because Winnipeg is windy and prolonged temperature inversions are rare, smog is seldom seen here. Unlike cities that are situated in valleys or close to mountains, Winnipeg's flat terrain dilutes and disperses much of the air pollution produced here.

Issues related to air quality fall under provincial jurisdiction. Nevertheless, the City of Winnipeg is involved in initiatives to help reduce the local and global effects of air pollution. These include Winnipeg Transit's Eco-pass program, and preliminary discussions on supporting an incentive program to encourage the owners of older high-polluting vehicles to scrap their vehicles.

Manitoba Conservation has published air quality standards for the province, and monitors two air-quality monitoring stations in Winnipeg. One is located in the city centre and the other in the suburbs.

POLICY OBJECTIVE

The City of Winnipeg will continue to seek ways to mitigate its contribution to air pollution, and will work with citizen and industry groups toward reducing nuisance odours resulting from production and manufacturing.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Air Quality for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Integrating gas/electric hybrid vehicles into its existing fleet;

b. Exploring the use of alternative fuels for fleet vehicles;

c. Exploring the effects of City-owned equipment on air quality (for example, machinery operating on two-stroke engines, leaf blowers); and

d. Ensuring that City operations do not produce undue nuisance odours.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

e. Working with industry and citizen groups to mitigate nuisance odours that impact negatively on citizens;

f. Working with the province toward mitigating the impact of stubble burning around the City of Winnipeg; and

g. Educating the public on things that they can do to limit their contribution to poor air quality.

3-1 ENERGY CONSERVATION

WHAT IS THE ISSUE?

In Canada, per-capita energy consumption is 320 GJ (Giga Joules) per year, while energy consumption in other developed nations such as Japan (153 GJ), Germany (165 GJ), England (166 GJ), Austria (129 GJ) and France (169 GJ) remain significantly lower (International Yearbook, 2000). Excessive heating, cooling, lighting and ventilation expenditures are evidence of unsustainable energy consumption. Local economies are weakened by a dependence on imported energy. Conversely investing in energy conservation programs, and developing local sources of sustainable energy, strengthens the local economy.

WHERE ARE WE NOW?

The bulk of Winnipeg's energy consumption is in the form of non-renewable fossil fuels imported from outside of the province. Over the past decade City departments have embarked on numerous energy efficiency programs, with Winnipeg Hydro's Power Smart program being the hallmark of these efforts. With the sale of Winnipeg Hydro, the City developed a revolving fund to be used for continued energy efficiency initiatives within City operations.

In a November 2002 opinion poll commissioned by the Civic Environmental Committee, 89% of Winnipeggers polled indicated that they were in favour of tax incentives focused on improving energy efficiency in commercial, industrial, and residential buildings.

POLICY OBJECTIVE

The City of Winnipeg will continue to undertake a broad range of energy conservation initiatives within its own operations and will provide citizens and communities with the tools to do the same.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Energy Conservation for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Continuing with demand side management energy reduction programs, and adopting appropriate energy efficiency standards in the construction and retrofitting of civic buildings;

b. Including energy efficiency criteria in the procurement of machinery and equipment, as well as the leasing of facilities for use by the City; and

c. Ensuring that future land use and development initiatives consider energy efficiency criteria.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

d. Educating citizens on home energy efficiency;

e. Educating citizens on landscape design strategies that enhance home energy efficiency;

f. Providing tools to citizens to develop community-operated home energy efficiency programs and work towards energy efficiency goals;

g. Ensuring that City tax assistance programs (for example, the Home Renovation Tax Assistance Program) emphasize eco-efficiency upgrades;

h. Working with the province towards enhancements to the energy efficiency requirements found in the Manitoba Building Code;

i. Working with the Province of Manitoba to shift taxes away from energy efficient activities and eco-upgrades (such as home insulation or efficient windows) and towards energy consumption;

j. Ensuring that future Smart Growth development follow guidelines to maximize solar access and building performance; and

k. Exploring the use of innovative energy systems (for example, district heating and geothermal heating) in future developments.

WHAT IS THE ISSUE?

Sustainable energy systems produce energy without depleting natural resources, altering ecosystems, or compromising future generations' access to energy resources. Sustainable energy can be used to provide heating, cooling or electrical power, and can be used in conjunction with conventional energy sources such as natural gas and hydroelectric power.

Examples of sustainable energy include:

- wind generated electricity
- solar generated electricity and water heating
- biomass resources
- geothermal energy
- river velocity electrical turbines
- various electrical generating technologies

WHERE ARE WE NOW?

In Canada, there are only five utility companies that provide consumers with the option to purchase sustainable energy. These include; West Kootenay Power (BC), Enmax/Epcor (AB), SaskPower (SK), and Toronto Hydro (ON). The City of Winnipeg and Manitoba Hydro have completed an analysis of the opportunities and costs associated with capturing methane from the Brady Landfill Site for flaring or conversion to electricity. The City is currently recovering bio-gas at one of its wastewater treatment plants and converts this to heat for use in treating sewage. Winnipeg Transit has partnered with the University of Manitoba in an innovative partnership to develop a prototype design for a solar powered bus shelter. The prototype shelter is located at the University's Fort Garry campus.

POLICY OBJECTIVE

The City of Winnipeg will work with Federal and Provincial governments, Manitoba Hydro, and the private sector towards the long-term goal of becoming a leading municipal producer and consumer of sustainable energy.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Sustainable Energy for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Purchasing from sources of sustainable energy as these become available;

b. Producing sustainable energy at City buildings (for example, geothermal heat pumps and photovoltaic energy cells);

c. Developing small-scale solar, wind, or river velocity electrical generation capacity that could be used by the City of Winnipeg's operations; and

d. Continuing to develop partnerships in the development of energy efficient infrastructure and sustainable energy production.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

e. Working with Manitoba Hydro to develop programs geared towards providing sustainable power alternatives to Winnipeg residents (for example, wind generated electricity);

f. Working with Manitoba Hydro to promote geothermal heating and cooling to Winnipeg residents and businesses;

g. Educating citizens on sustainable energy sources; and

h. Cooperating with the Federal Government in order to shift subsidies away from non-renewable energy (for example, oil and gas) and towards producers of sustainable energy (for example, wind generated electricity).

4-1 GUIDING LAND USE THROUGH SUSTAINABLE URBAN GROWTH

WHAT IS THE ISSUE?

Higher urban population densities reduce the costs associated with the delivery of municipal services and infrastructure. There is a growing concern that outward expansion of urban development is not in the long-term economic interest of cities. Problems associated with unsustainable urban expansion include low population densities, automobile-oriented infrastructure, homogeneous development, and the destruction of natural habitat. Although still supporting growth, communities throughout North America and Europe are questioning the use of public money to expand infrastructure at the city's edge, while struggling to maintain existing infrastructure in the urban core. This challenge has spurred what has become known as the "Smart Growth" or "Sustainable Growth" movement.

WHERE ARE WE NOW?

Historically, Winnipeg has consumed more land per capita than many other Canadian cities. Between 1966 and 1986 Winnipeg consumed 96 hectares per 1000 increase in population, compared to 34 hectares in Vancouver and 43 hectares in Calgary. Between 1986 and 1996, population growth in the municipalities surrounding Winnipeg was 10-20%, while population growth within Winnipeg was 3-3.7%. These two trends have put intense pressure on Winnipeg's limited resources available for infrastructure and operations. Recently, the City of Winnipeg's Planning Property and Development Department adopted an integrated planning model for the City. This model considers the impact of planning decisions on urban infrastructure and services. It will address these issues while developing a sustainable urban growth policy for the City during the next review of *Plan Winnipeg*.

In November of 2002, the City of Winnipeg Civic Environmental Committee commissioned a poll concerning seven environmental issues. Respondents felt least informed about sprawl. Twenty-seven percent of those polled indicated that they were more concerned about sprawl today than they were two years ago. Furthermore, 74% indicated that they were in favour of an urban growth boundary and preferred infrastructure renewal over expansion.

POLICY OBJECTIVE

The City of Winnipeg will continue its policy of sustainable urban growth through the use of *Plan Winnipeg* to ensure the development of vibrant, sustainable communities that lead to positive cultural, environmental, and economic outcomes. In addition, the City will consult with the Province of Manitoba to develop long-range land use plans.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on sustainable land use and development for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Working towards a sustainable urban growth policy for the City of Winnipeg including issues such as downtown housing, mixed land use, urban densification, and integrated transportation that maximizes public transit opportunities (e.g., Southwest Transit Corridor Bus Rapid Transit System);

b. Educating City employees on sustainable growth alternatives to urban sprawl;

c. Working cooperatively with the Province and developers toward creating guidelines for future sustainable communities;

d. Committing to the principle of fiscal and environmental sustainability by examining the equity of existing development policies;

e. Considering demand-side management policies that prioritize infrastructure renewal rather than expanding infrastructure and services;

f. Studying the effectiveness of rural policy areas, such as urban growth boundaries, within the context of a sustainable urban growth policy for Winnipeg and the capital region municipalities; and

g. Creating a long-range land use and development plan for the next version of *Plan Winnipeg* that addresses and provides direction for meeting sustainable urban growth policies.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

h. Educating the public and developers on the benefits of sustainable urban growth and the problems associated with urban sprawl;

i. Consulting with the public and with stakeholder groups on the City of Winnipeg's sustainable urban growth policy and the development of a more detailed Land Development Plan;

j. Working with developers, citizens, and community groups to explore methods of downtown residential intensification;

k. Ensuring that new developments benefit the whole community and the environment, and are equitable.

l. Creating opportunities and incentives for citizens to live in close proximity to their work;

m. Shifting taxes as a means of recovering costs from less sustainable neighbourhoods;

n. Providing incentives for designing more sustainable neighbourhoods that reflect the concept of sustainable urban growth and *Plan Winnipeg*;

o. Working with other levels of government and neighbouring municipalities to develop consistent policy and approaches to sustainable urban growth;

p. Establishing design guidelines that ensure high quality pedestrian environments in both the new and existing urban fabric; and

q. Promoting active transportation as a key element in Smart Growth.

WHAT IS THE ISSUE?

Winnipeg is in many ways an island habitat. Though there are many non-native plants, the City serves as a vessel for native species. However, native plants are not always suited to urban environments. They should only be planted where appropriate and where they can adapt. Prairie, wetland, wet meadow, river bottom forest, and aspen parkland are indigenous ecological communities found within the City. Winnipeg has a phenomenal floodplain forest environment, which has been lost outside the city due to agricultural development. Rivers and floodplains are beneficial for migrating animals because they connect natural habitats used as corridors.

Settlement of the Winnipeg area resulted in the introduction of non-native plant and animal species. As rich ecosystems have been replaced with less biologically diverse ones, urban ecosystems have become less resistant to pest infestation. As a consequence, urban parks, private properties, and open spaces are susceptible to Dutch elm disease, cankerworms, forest tent caterpillars, and the invasion of weed species into natural habitats.

Parks, open spaces, and natural areas make a significant contribution to the attractiveness of the city and to its quality of life. In addition to their environmental benefits, these areas provide positive economic benefits such as increased recreation, healthier citizens, and enhanced tourism opportunities.

WHERE ARE WE NOW?

The City of Winnipeg is currently working on a Sensitive Lands Plan. The City Naturalist has developed an inventory of natural areas in Winnipeg to support this initiative. In addition to providing interpretive services, the Naturalist Services Branch works with community groups on habitat restoration and naturalization projects. The Living Prairie Museum offers interpretive tours of native tall grass prairie and has recently developed a mobile grassland display. Winnipeg has more parkland per 1000 persons than Ottawa, but significantly less than Calgary, Edmonton and Vancouver. The City is also working to develop a comprehensive Parks Framework Plan and a Facilities Rationalization Study. These two studies will identify issues and solutions associated with City parks and facilities.

When asked to indicate what they value most about Winnipeg, citizens ranked “scenery, green space and open space” as the sixth most valuable City feature on a list of 14 choices (2001 poll commissioned by the CAO Secretariat).

POLICY OBJECTIVE

The City of Winnipeg will preserve, protect and enhance its open spaces and natural areas, and will empower citizens to undertake naturalization and rehabilitation projects within their communities.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Parks, Open Space, and Natural Areas for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Using native plant species on prominent City properties (for example, City Hall);

b. Fostering biodiversity to the fullest extent possible on City-owned lands;

c. Rehabilitating endangered environments, protecting sensitive habitat and reintroducing natural species on City-owned properties;

d. Continuing to educate City employees involved in landscape design, planning and maintenance on the value of natural landscapes, and providing seminars on naturalization techniques to City employees;

e. Promoting biodiversity, land stewardship, and the protection of natural areas;

f. Enforcing stabilization of rivers and streams; and

g. Identifying and enforcing highly sensitive buffer zones.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

h. Educating the public on the value of a biologically diverse urban landscape;

i. Providing public education on naturalization techniques;

j. Cooperating with other levels of government to ensure the protection of sensitive lands under their ownership;

k. Educating the public on the importance of preserving habitat on private property and empowering citizens and community groups by providing them with the tools and resources to naturalize disturbed areas; and

l. Providing incentives for preserving and naturalizing habitat on privately owned property.

4-3 DEVELOPING BROWNFIELD SITES

WHAT IS THE ISSUE?

Brownfields are industrial, commercial or residential sites that have not been redeveloped. Often this is because of actual or perceived liabilities associated with environmental contamination. Potential liabilities magnify the cost, time, and risk of redevelopment. Examples of brownfield sites include decommissioned railway yards, old warehouses, and abandoned gas stations. Concerns over legal liability, cleanup costs, reluctance to invest in older urban areas, and the availability of previously undeveloped sites (greenfield sites) deter private sector investment in brownfields. Under-utilization, abandonment, lost tax revenues, fiscal stress, low property values and acceleration of urban sprawl result from a lack of brownfield development.

The benefits of developing brownfield sites include: job creation, financial return on under-utilized property, community economic development opportunities, increased tax revenues, improved quality of life, elimination of blight, distinctive place-making opportunities that emerge from prior use of the site, relief from urban sprawl, and the opportunity to integrate sustainable communities into the existing urban fabric. Brownfield sites are often located along existing transportation corridors, or within established urban areas, thereby maximizing existing municipal infrastructure and services.

WHERE ARE WE NOW?

The City acquires brownfield sites through purchase or tax sale. The City's Land Operating Reserve Account was established with the purpose of improving properties prior to re-sale, but not for the specific purpose of remediating contaminated sites. Therefore, the reserve does not have the financial ability to remediate major brownfield liabilities. Using this reserve fund for brownfield remediation constrains the City's ability to invest in and realize revenue from other, less costly improvement projects. The most notable brownfield site owned by the City is the 170-acre Public Markets (Ltd.) site located in St. Boniface. The Public Markets Land Use Plan was commissioned by the City to study three different land use options: residential, recreation/institutional, or industrial use. As of February 2004, the study was still under consideration. The estimated cost of development varies with land use and has not been finalized.

POLICY OBJECTIVE

The City of Winnipeg will work with communities, developers, and other levels of government to develop a program that works towards the remediation of brownfield sites. The City will work with other levels of government to develop the fiscal and policy tools that will make brownfield site redevelopment projects attractive to communities and developers.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on developing brownfield sites for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Cooperating with other levels of government in the development of sustainable fiscal tools for the remediation of brownfield sites (for example, a dedicated brownfield remediation reserve fund);

b. Utilizing brownfield sites in managing the demand for undeveloped greenfield sites;

c. Ensuring that brownfield remediation is represented within the City's policy regarding land use and development; and

d. Considering the recommendations as outlined in the National Roundtable on the Environment and Economy (NRTEE) brownfield redevelopment strategy (2003).

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

e. Educating citizens, communities, and developers about the benefits associated with developing brownfield sites;

f. Developing appropriate incentives to encourage the private sector to undertake brownfield development projects; and

g. Developing tools to mitigate legal/liability problems associated with brownfield sites.

WHAT IS THE ISSUE?

Greenways are corridors of protected open spaces managed for the purposes of active transportation, recreation, and/or conservation. Trails and greenways often follow natural land or water features, linking nature reserves, parks, historic sites, and communities. Trails and greenways may also follow abandoned rail corridors and utility rights of way. They are often developed through public/private partnerships. Trails and greenways can be used to link neighbourhoods with downtown workplaces, shopping, and entertainment districts.

Trails and greenways bring job growth and positive economic spin-offs, such as bike and equipment rentals, restaurants, and lodging. Trails and greenways have been shown to increase property values. They often make up an integral part of strategic plans used to attract businesses and residents to cities. In addition, greenways preserve vital ecological processes and provide open spaces that buffer streams and rivers from soil erosion and polluted runoff. Trails and greenways create healthy recreation and transportation opportunities by providing people of all ages with attractive, safe, accessible, and low cost opportunities to engage in physical activity.

WHERE ARE WE NOW?

Trail users and trail stewardship groups in the City of Winnipeg have formed a coalition called the Winnipeg Trails Association in order to further their goals regarding trails within the City of Winnipeg. The Winnipeg Trails Association in partnership with Rivers West and the City of Winnipeg initiated a strategic planning process in order to develop a Strategic Trails Plan for the City of Winnipeg. This plan, published in July 2003, identifies key needs and priorities of the trail groups. It is anticipated that the plan will be used to steer the City's reprioritization of its Winnipeg Parkway System and its acquisition of lands for trails.

Recent additions to Winnipeg's urban trail network include the Bishop Grandin Boulevard Greenway, the Assiniboine Parkway, the Harte trail, Seine River Trail (from Provencher Boulevard South to Bertrand Street), Kavanagh Park (north of Kavanagh Street at Seine River), Lyndale Drive (Norwood Bridge to St. Mary's Road), Churchill Drive (the Forks to Mulvey Avenue and Brandon to Cockburn Street), Kildonan Park (along the Red River and inner park loop). There is also a growing interest in linking outlying Capital Region parks with Winnipeg city parks through a network of trails and greenways. The floodway redevelopment presents numerous opportunities to develop new trail systems. In addition, increasing public and private stewardship is an integral part of maintaining the trail network.

POLICY OBJECTIVE

The City of Winnipeg will strive to create a safe and extensive network of trails and greenways that link sites of ecological, historical, and cultural importance. Trails and greenways will be promoted to improve the connectivity between neighbourhoods. Active commuters, tourists, and citizens engaged in recreation, will use these trails. Therefore, consistency in the trail network will be created and maintained.

KEY STRATEGIES

The following items are presented as preliminary suggestions towards developing a priority plan on trails and greenways for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Integrating cycling and active transportation facilities such as bike racks, lockers, and showers within City workplaces;

b. Emphasizing the recreational, commuting, and health benefits of trail and greenway systems among City employees;

c. Studying all potential sites for trail and greenway development; and

d. Prioritizing opportunities for trail and greenway development and their respective cultural, economic and environmental opportunities.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

e. Cooperating with the private sector and other levels of government to encourage the donation or use of private land to be used in trail and greenway development;

f. Undertaking cooperative initiatives with organizations that promote community health and active living in order to encourage the use of Winnipeg's trails and greenways for both daily commuters and recreational users;

g. Establishing ways to provide secure and convenient bicycle lock-up and storage facilities throughout the City; and

h. Encouraging the private sector to integrate cycling and active transportation facilities into the workplace through the development of cost-sharing or tax deductible program applicable to the installation of lock-up, storage, shower and change-room facilities.

4-5 GREEN BUILDING

WHAT IS THE ISSUE?

Many of the environmental challenges facing urban areas such as Winnipeg are directly related to poor building performance. Buildings consume a significant amount of energy, water, and material resources. It is estimated that 40% of Canada's greenhouse gases are emitted from its buildings. Conventional buildings and development patterns can drastically increase the demand for energy and resources placed on municipal services and infrastructure.

Rather than squeezing energy-efficient features into tight construction budgets, green building requires an integrated approach to project budgeting, where items such as resource efficiency, lighting systems, mechanical systems, water efficiency and building ecology are considered collectively over the life-cycle of the building. Doing so validates the need for systems that have higher individual costs, yet reduce operation, maintenance, or site servicing costs over the long run.

WHERE ARE WE NOW?

North American cities are beginning to adopt green building guidelines. Natural Resources Canada's C2000 program and the US Green Building Council's Green Building Rating System are examples of innovative standards for green building. To qualify as C2000, a building must be designed to use 50% less energy than a comparable building constructed to the *Model National Energy Code for Buildings*. In Winnipeg, Red River College's Princess Street Campus was designed to meet C2000 standards. Similarly, the Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ is a voluntary standard for developing high-performance sustainable buildings. LEED™ emphasizes state of the art building strategies including sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality. Winnipeg's Mountain Equipment Co-op building was designed to meet LEED standards.

In the November 2002 poll commissioned by the City of Winnipeg Civic Environmental Committee, 89% of those polled indicated that they were supportive of tax incentives towards residential and commercial energy efficiency upgrades.

POLICY OBJECTIVE

The City of Winnipeg will incorporate principles of green building into new construction projects and building retrofits and will develop programs and policies that encourage green building within the private sector. The City will work to incorporate green building rating standards within its own operations, making green building the core design principle of all future civic projects.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Green Buildings for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Adopting an appropriate green building standard for new city buildings, retrofit projects, landscape design projects, and becoming a member of the Canadian Green Building Council;

b. Providing education opportunities for city employees to become LEED™ certified;

c. Phasing in green design standards for externally-tendered projects;

d. Cooperating with other levels of government and Manitoba Hydro toward developing green building partnership opportunities; and

e. Promoting innovation through green-building demonstration projects on City-owned properties, with the long-term goal of making green design a hallmark of all civic buildings and landscape architecture.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

f. Educating citizens on the benefits of green building;

g. Providing tools that empower citizens, private corporations and developers to adopt green building standards;

h. Working collaboratively with developers and property managers to encourage green building within the private sector through improved building codes;

i. Working with design and engineering professionals to foster local knowledge of green building techniques;

j. Working with local universities and research institutes to develop green building techniques appropriate to local conditions; and

k. Helping to facilitate the dissemination of green building research among public sector, academic and professional organizations.

WHAT IS THE ISSUE?

The urban forest is comprised of all trees growing within the City of Winnipeg limits. The urban forest can be divided into publicly owned and privately owned trees. Public trees are owned by the City of Winnipeg, and are primarily growing on boulevards, parks, golf courses, cemeteries, riverbanks, and natural areas. Private trees are owned by private landowners, and grow on residential and industrial property, riverbanks, and natural areas.

Planted trees and natural forested areas make a significant contribution to the attractiveness of the city and to its quality of life. They are an intrinsic part of making a city livable. Trees conserve energy by shading buildings and paved surfaces, filtering airborne pollutants, removing atmospheric carbon dioxide, and reducing storm water runoff. In addition to their environmental benefits, trees provide positive economic benefits. They enhance property values, increase recreation, and enhance tourism opportunities. Therefore, their maintenance and replacement should be a priority.

At present, the benefits of trees in Winnipeg are not maximized because of poor maintenance practices and vacant planting sites. Moreover, potential new pests (such as Emerald Ash Borer) and existing tree pests (such as Dutch Elm Disease) are threatening Winnipeg's urban forest, thus requiring specialized management techniques.

WHERE ARE WE NOW?

The City of Winnipeg Forestry Branch manages the Forestry and Dutch Elm Disease (DED) programs. The Forestry Branch also plants, prunes, and maintains trees on boulevards and in parks. Winnipeg's current forestry maintenance standards are inferior to those of other prairie cities. This puts Winnipeg's beloved urban forest at risk. The essential and innovative DED program controls DED on both public and private property. Although recent elm loss rates have been higher than usual, this program has been relatively successful. However, a number of improvements to this program are required. For example, there is an overall need to monitor the environmental losses and gains of the urban forest. The Forestry Branch continues to work with various stakeholders and partners including the Coalition to Save the Elms on these issues.

In order to address the aforementioned issues and concerns, the Forestry Branch intends to prepare a report entitled, "An Urban Forest Management Strategy for the City of Winnipeg." This report will identify a plan and the resources required to manage the urban forest as an important resource for present and future generations.

POLICY OBJECTIVE

The City of Winnipeg will preserve, protect and enhance its urban forest by planting more trees, adopting high standards of tree maintenance, diversifying its urban forest, and encouraging other levels of government and the public to become involved.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Managing Urban Forests for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Increasing the stock of trees through tree planting programs, diversifying the variety of new trees, and encouraging tree planting by others;

b. Adopting high standards of maintenance and replacement of trees affected by disease, in particular Dutch elm disease;

c. Preserving natural forests within the city and requiring developers to retain existing trees wherever possible;

d. Encouraging the participation of other levels of government in programs to protect and enhance the city's urban forest;

e. Quantifying the benefits of urban trees through canopy analysis; and

f. Establishing and promoting Winnipeg as a Centre for Excellence in DED control and urban forest management.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

g. Educating the public on the benefits of the urban forest;

h. Increasing public involvement and/or recruiting key organizations from the public, private and voluntary sectors;

i. Cooperating with other levels of government; and

j. Encouraging citizens to become involved in tree planting and the care of trees on private lands.

5-1 TRANSPORTATION DEMAND MANAGEMENT

WHAT IS THE ISSUE?

The objective of conventional transportation management has been to move vehicles, primarily automobiles, in and around communities as rapidly as possible. However, it has been a continual challenge for governments to fund the expansion of transportation infrastructure based on the needs of automobile users. Traffic congestion, sprawl, and pollution are not the only problems associated with conventional transportation planning. Other results include land consumption, the loss of agricultural land and rural townscapes, disparities among those who can and cannot drive, and danger to residents who live close to busy streets. Many municipalities throughout North America and Europe are now switching the emphasis from maximizing the flow of traffic to alternatives, including more active and efficient forms of transportation.

Transportation Demand Management (TDM) refers to any strategy that encourages efficient transportation behaviour. TDM strategies include enhancements to public transportation, programs to reduce automobile use (such as telecommuting or ridesharing), behavioural changes (such as encouraging travel during off peak hours), tax shifting and/or price reforms to correct inefficiencies and inequities in transportation, and investments in programs that support active modes of transportation such as cycling and walking.

WHERE ARE WE NOW?

In Canada's major cities the average commuting time, for a round trip by car, is 48 minutes. Winnipeg is above the national average at 51 minutes per commute, higher than Calgary (45 min.), Edmonton (43 min), Halifax (38 min.), Hamilton (44 min) and Quebec (45 min). It is lower than Toronto (59 min.), Vancouver (60 min) and Montreal (54 min.)[iii] Winnipeg's citizens are, understandably, increasingly concerned about traffic congestion.

In recent decades, the number of trips made by automobiles in Winnipeg has grown much faster than the rate of population growth. In 2001, the City of Winnipeg reported 4.6 billion total vehicle kilometres of travel per year on Winnipeg roadways, and 7 million total person trips (using automobiles) per year on Winnipeg roadways. Continued growth in the proportion of urban trips made by the automobile is neither financially nor environmentally sustainable. TDM policies that include active transportation options would serve to reverse the trend toward increasing vehicle kilometres traveled. City Council has recently approved an Integrated Planning Model for the City of Winnipeg. It will serve to integrate land-use planning with transportation planning decisions. It is anticipated that this model will incorporate TDM policies into future land-use decisions.

In the November 2002 poll commissioned by the City of Winnipeg Civic Environmental Committee, citizens ranked their concern over traffic congestion higher than any other environmental issue. 51% of those polled indicated that they are more concerned about traffic congestion today than they were two years ago.

POLICY OBJECTIVE

The City of Winnipeg will work with citizens, community groups, NGOs, the business community, and other levels of government towards the development of a comprehensive TDM strategy for Winnipeg.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Transportation Demand Management for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD LEAD BY EXAMPLE AND MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Managing the demands for automobile infrastructure rather than expanding supply;

b. Adopting policies towards telecommuting and flex time to reduce demands on transportation infrastructure; and

c. Implementing an employee parking policy that supports car-pooling and discourages single occupancy vehicles.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

d. Working cooperatively with the Province to develop a commuter trip reduction program that promotes environmentally friendly commuting options;

e. Working with the Province to shift tax payer support away from automobile infrastructure and towards environmentally friendly modes of transportation;

f. Demonstrating innovation by working with Manitoba Public Insurance to develop insurance policies that foster environmentally friendly behaviour (for example, automobile insurance based on kilometres traveled);

g. Empowering communities to develop TDM programs (for example, community bicycles, vehicle sharing cooperatives, and car pooling programs);

h. Providing public education campaigns on TDM;

WHAT IS THE ISSUE?

Sustainable public transportation systems contribute to the livability, economic strength, and environmental health of our communities. Accessibility to all residents is a key element of these transportation systems. They should be well integrated within new and existing developments, and be combined with active transportation networks including walking and cycling facilities and trails. Public transportation is most efficient when it provides greater mobility for non-drivers, rapid mobility along dense congested corridors, and is integrated with other modes of transportation. The convenience and affordability of sustainable public transportation should offer positive incentives to users.

In contrast, the current expansion of automobile infrastructure stimulates decentralized patterns of urban growth. This type of growth, or sprawl, increases the geographic area that public transportation networks must cover and diminishes the convenience and cost effectiveness of these systems. Automobile-centred infrastructure comes at the expense of transit services, making subsidies to automobile drivers higher than those provided to transit users. Successful and sustainable transit systems make solid business sense, but require the removal of investment practices that favour automobiles over public transportation.

WHERE ARE WE NOW?

The expansion of automobile infrastructure has stimulated decentralized growth in Winnipeg, increasing the geographic area that Winnipeg Transit must service. Unsustainable urban expansion, coupled with automobile-focused infrastructure that has been financed through debt, has substantially reduced the City's ability to deliver equitable public transit services. Nevertheless, Winnipeg Transit has undertaken many innovative projects geared towards increasing ridership, including the Eco-pass program, post-secondary discount passes, dial a ride services, a web-based trip planner (Navigo), upgrades of its existing rolling stock, integrated bicycle racks on buses, and participation in the Urban Transportation Showcase Program. Many of these initiatives are identified in the Council adopted report titled *Direction to the Future* that provides a plan to develop supportive conditions for transit. Winnipeg Transit's commitment to innovation, its understanding of the barriers to public transportation, coupled with public willingness to utilize transit should lead to increased ridership in the long run.

In the November 2002 poll commissioned by the City of Winnipeg Civic Environmental Committee, 56% of respondents indicated that they would be willing to reduce their automobile use by taking public transportation more often.

POLICY OBJECTIVE

The City of Winnipeg will work with citizens, the business community, and other levels of government towards the development of a sustainable public transportation system.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Public Transportation for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Implementating innovative programmes to encourage employees to use public transit (e.g. Eco-pass);

b. Educating city employees on the benefits, including economic benefits, of using transit; and

c. Shifting mileage and parking subsidies away from the use of automobiles.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

d. Continuing to implement the recommendations in Direction to the Future;

e. Ensuring that future Smart Growth developments are sufficiently oriented toward public transportation, and that transit can be provided without undue burden on City resources;

f. Providing ridership incentives to communities that show support for Transportation Demand Management programs (see previous section);

g. Working with other levels of government to develop private sector commuter trip reduction incentives;

h. Working with other levels of government to shift the investment of fuel tax revenue away from urban automobile infrastructure and towards public transportation infrastructure;

i. Working towards equitable transit funding arrangements with other levels of government;

j. Requesting that the Federal government make employee transit subsidies a tax-exempt benefit; and

k. Promoting the "Eco-pass" program to major employers in Winnipeg.

5-3 ACTIVE TRANSPORTATION

WHAT IS THE ISSUE?

The Federation of Canadian Municipalities defines "active transportation" as "choosing to walk, cycle or use some other physical activity to get where you need to go." By including walking and cycling considerations in urban design and planning we build socially, environmentally and economically healthy and vibrant communities. However, no comprehensive active transportation plan currently exists for the City of Winnipeg.

Good transportation solutions must work hand in hand with the community. Bicycle and pedestrian friendly communities have higher housing values, generate more local business, reduce commuting costs, cost the taxpayer less, promote a more active lifestyle, and attract tourists. Walking and cycling also contribute to activity in the public realm, thereby building safer, stronger and more robust communities.

Nationally, Calgary and Toronto have integrated walking and cycling plans. In three years, the Greater Vancouver Transport Authority will invest over $15 million for cycling initiatives.

WHERE ARE WE NOW?

In 2003, Winnipeg won the Commuter Challenge for cities between 499,999 and 999,999 people. The Commuter Challenge is a friendly Canadian competition that encourages active transportation. In Winnipeg, the Challenge was organized by Resource Conservation Manitoba (RCM) and supported in part by the City of Winnipeg. Additionally with City support, RCM focuses on several Green Commuting Initiatives (GCIs) including the Active and Safe Routes to School (ASRTS) program for elementary schools and Off Ramp, geared towards high school students. Both programs aim to reduce school vehicle trips and assist students and their families to make green commuting choices.

In 1993, the City of Winnipeg commissioned Marr Consulting and Communications to undertake the Winnipeg Bicycle Facility Study. The report recommended an improvement in road conditions, improved cycling facilities, more direct route for commuters, integrating facilities and user concerns into the planning process. Further, the report highlighted the value of both recreational and commuter cyclists, the adoption of design standards, and adequate resources for the maintenance of facilities.

In 2003, a detailed analysis of active transportation, at the planning stage of policy and project development in Winnipeg, was undertaken by Allison Cook, Active Transportation Planner for London Ontario, and University of Manitoba City Planning graduate.

74% of citizens polled in a November 2002 Civic Environmental survey indicated that they are willing to reduce their motorized transportation by walking or cycling more. In addition, in an October 2002 CAO Secretariat survey, 85% of respondents said it was easy to get around Winnipeg by car, whereas only 56% stated it was "easy to get around Winnipeg by bicycle." Only 20% of the CAO Secretariat survey respondents felt safe walking alone at night in the downtown.

POLICY OBJECTIVE

The City of Winnipeg will work with citizens, local NGOs, the business community, and other levels of government to increase the degree of participation in active transportation through the expansion and implementation of facilities and infrastructure and towards the development of a comprehensive active transportation strategy for Winnipeg.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Active Transportation for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Examining ways to make existing streets more accessible for active transportation, such as cycling and walking;

b. Continuing support, endorsement, and commitment to the Commuter Challenge;

c. Promoting active transportation alternatives and benefits to civic employees; and

d. Providing facilities at public buildings and city offices such as secure bicycle storage, lockers and shower facilities for cyclists.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

e. Partnering with local NGOs, community groups and other levels of government to support active transportation initiatives;

f. Working with the Province toward shifting taxes away from automobile infrastructure toward environmentally friendly modes of transportation;

g. Empowering communities to promote and engage in active transportation initiatives;

h. Examining the economic, social and health benefits of regenerating and building communities that encourage active transportation;

i. Providing public education campaigns on walking and cycling;

j. Ensuring the principle of equity by providing safe designated bicycle lanes, active and commuting infrastructure (for example, safe bicycle storage areas), and that streets are walkable and pedestrian friendly; and

k. Cooperating with private land owners and other levels of government to negotiate access to rail rights of way for use in the development of cycling and pedestrian corridors.

WHAT IS THE ISSUE?

By-products of residential consumption include organic kitchen and yard waste, packaging waste, post consumer waste, and household hazardous waste (HHW). Residential solid waste makes up approximately 40% of Canada's solid waste stream while the remaining 60% results from industrial, commercial, and institutional activities (ICI). Household hazardous wastes are generally corrosive, toxic, reactive or flammable and include used oil products, liquid fuels, pharmaceuticals, consumer electronics, used batteries, paint, stains, cleansers, and pesticides.

Problems related to landfills and waste production include: surface and groundwater contamination, methane gas, land consumption, concentration of household hazardous waste, and the loss of potential revenues generated from the recovery of recyclables. The key components of a sustainable waste minimization strategy include source reduction, recovery and reuse, recovery and recycling, or composting and disposal.

WHERE ARE WE NOW?

Winnipeg residents currently divert approximately 50% of available recyclables away from landfill. In May 2001, City Council passed the Waste Minimization Strategy. This strategy includes provision for recycling in public spaces, recycling in apartments and condominiums, and a pilot program for the collection of yard waste. Additional programs that the Solid Waste Division has embarked on include the sale of back-yard composters at a subsidized price, a residential leaf composting program, and a Christmas tree mulching program. In 2002, the City fell slightly short of its goal of collecting 34,000 tonnes of recyclables. Despite the success of the recycling program, the costs of managing our waste stream continue to grow, creating a significant burden on City revenues and on our environment.

Both the Province of Manitoba and the City of Winnipeg have recognized that the city's existing HHW collection infrastructure is inadequate. The Province is expected to table legislation that will make sellers and manufacturers of HHW products responsible for stewardship programs related to their products. It is envisioned that there will be a province-wide network of collection depots, with each depot accepting all products designated as HHW.

The City of Winnipeg will continue to provide effective residential waste management and maximize the amount of material diverted away from the waste stream. The City will do so in a manner that that reflects our growing need to reduce waste, reuse materials, divert organic waste, and recycle.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Household Solid and Hazardous Waste Minimization for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Ensuring that recycling services are available in all City-operated offices;

b. Providing HHW, composting, and waste minimization education to City employees;

c. Including minimal packaging guidelines in future green procurement policies; and

d. Composting organic waste resulting from all city operations;

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

e. Participating in community education programs that emphasize the importance of avoiding excessively packaged goods and extended producer responsibility for waste;

f. Empowering citizens by providing them with the tools and knowledge to develop community-based waste minimization programs, set community-wide waste minimization targets, and report on progress;

g. Exploring sustainable financing options for waste collection such as the "polluter pay" principle or financing waste collection through a separate utility;

h. Ensuring social and intergenerational equity in future waste minimization programs;

i. Developing an appropriate alternative to autobins in residential neighborhoods;

j. Working with the Province of Manitoba and the private sector to increase the availability of HHW depots and the reduction and reuse of materials wherever possible (for example, organizing paint/stain exchanges in cooperation with housing renewal organizations);

k. Working to extend the list of recyclables included in the curbside recycling program (for example, spent aerosol cans). Note: aerosol cans that are not empty would be considered hazardous waste and would need to be disposed of accordingly;

l. Educating the public on environmentally friendly household cleansers and the importance of keeping HHW out of landfills;

m. Providing incentives for the productive re-use of salvaged building materials; and

n. Requiring new buildings and facilities to be designed for recycling services.

6-2 INDUSTRIAL COMMERCIAL AND INSTITUTIONAL (ICI) WASTE MINIMIZATION

WHAT IS THE ISSUE?

ICI waste is comprised of all non-residential refuse including by-products of production and manufacturing, commercial activities, and institutions such as university campuses and hospitals. It is estimated that ICI waste accounts for 60% of waste deposited in landfills. Although residential waste reduction initiatives have proven to be successful, the progress made in reducing the ICI waste stream is more difficult to track.

Extended Producer Responsibility (EPR) is the most significant tool used to limit ICI waste. EPR programs broaden the responsibility of producers to include managing waste products once discarded by the consumer. Making producers responsible for post consumer solid waste can generate incentives for them to incorporate a broader range of environmental considerations into product design and material selection.

WHERE ARE WE NOW?

It is estimated that 70% of the City's ICI waste is diverted away from Winnipeg's Brady Landfill into landfills located within the Capital Region. Competition among Capital Region landfills has led to tipping fees in Manitoba being among the lowest in Canada. Tipping fees at Brady Landfill have been reduced from $40.00 per tonne in 1999 to $22.50 per tonne today, creating a disincentive for ICI waste reduction. It is, therefore, difficult to address waste reduction in the ICI sector without Provincial assistance. At $22.50 per metric tonne, Winnipeg's tipping fees are significantly lower than Toronto ($50.00), Guelph ($62.00), Edmonton ($40.00), Calgary ($33.50), Victoria ($67.50), and Vancouver ($65.00).

As part of the City of Winnipeg's initiatives to reduce ICI waste, the adaptive reuse of heritage buildings has been encouraged. The City has adopted policy on the preservation of historic buildings and provides funding through the Heritage Conservation Tax Credit Program and the CentreVenture Heritage Conservation Program. By preserving its built heritage, the City diverts needless demolition waste from landfills.

In the November 2002 poll commissioned by the City of Winnipeg Civic Environmental Committee, 69% of respondents were supportive of providing tax incentives to encourage the adaptive reuse of existing buildings.

POLICY OBJECTIVE

The City of Winnipeg will work with the Province of Manitoba and ICI waste producers towards enhancing systems and policies aimed at reducing the amount of ICI waste diverted to landfills. The adaptive re-use of buildings and/or their materials will continue to be encouraged.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Industrial, Commercial, and Institutional Waste for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Enhancing existing recycling programs at City-organized festivals and events;

b. Developing waste minimization plans for City offices departments, and operations;

c. Ensuring that construction and demolition projects have taken the appropriate steps toward minimizing waste; and

d. Demonstrating innovation by exploring methods of increasing the scope of materials recycled from City operations.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

e. Ensuring shared responsibility by requiring that construction and demolition projects have appropriate waste minimization plans;

f. Ensuring fiscal and environmental sustainability by requesting that the Province of Manitoba review competitive practices among landfill sites within the Manitoba capital region and revise tipping fees to encourage ICI waste reduction; and

g. Exploring sustainable financing methods for ICI waste diversion (for example, requesting that the Province of Manitoba enhance legislation and policies related to extended producer responsibility).

WHAT IS THE ISSUE?

Freshwater is a fundamental natural resource. Well designed water conservation programs provide fiscal and infrastructure advantages, reduce pressure on wastewater treatment plants, and reduce pollutant discharges into the environment. Although conservation programs are normally associated with water shortages, successful conservation programs focus on reducing consumption trends over the long-term. Winnipeg's water rate structure combines a quarterly fee and an inverted water rate where the fee decreases as consumption increases. However, international comparisons indicate that water rate structures that increase with consumption volumes will encourage conservation.

Owing to the global scarcity and uneven distribution of this resource, the City of Winnipeg recognizes the need to conserve its freshwater supply as much as possible. Compared to other Canadian cities, Winnipeg's per capita water consumption is comparatively low. In global terms, however, Winnipeggers are still among the largest per-capita consumers of water in the world.

WHERE ARE WE NOW?

Winnipeg obtains its drinking water via aquaduct from Shoal Lake. Winnipeg has 20 days of water stored in the Deacon Reservoir. Council has approved construction of a new state-of-the-art $214 million water treatment plant that will be operational by 2007. In addition, a $57 million renewal of the Shoal Lake Aqueduct began in 1993. This project will extend the life of the aqueduct by 50 years. The City is participating in the development of the Shoal Lake Watershed Management Plan to protect the quality of the water in Shoal Lake. Because water consumption rates have dropped since the late 1980s and early 1990s, programs promoting conservation have been scaled back. The Water and Waste Department is focusing future conservation efforts on reducing average annual demands.

Between 1998 and 2001, Winnipeg's water consumption was reduced by 27.5%. It dropped from 300 megalitres per day (MLd) to 218 MLd. Unaccounted for water uses (such as firefighting, street sweeping or losses through water main breaks) dropped by approximately 10% between 1988 and 2001. Water consumption should remain below the maximum capacity of the Shoal Lake Aqueduct well into the future.

In a 2001 poll conducted by the CAO Secretariat, 85% of respondents agreed with the statement "Winnipeg has safe, clean drinking water." In a 2002 poll conducted by the City of Winnipeg Civic Environmental Committee, 85% of respondents indicated that they favor rebates on low-flow toilets, showerheads and faucets. Initiatives to reduce Winnipeg's water consumption could postpone the need to expand the Shoal Lake aqueduct.

POLICY OBJECTIVE

The City of Winnipeg will continue to work towards an environmentally and fiscally sustainable water distribution system and will continue to ensure a safe supply of water for the citizens of Winnipeg. The City will continue to seek ways to promote water conservation.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Water Management and Conservation for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Incorporating innovative demonstration projects that demonstrate the City's commitment to demand-side management;

b. Continuing to implement water conservation demonstration projects at city owned facilities and properties including parks and golf courses (for example, using drought tolerant plants on city-owned properties); and

c. Storing rainwater for irrigation on City gardens.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

d. Promoting demand-side management in conjunction with biodiversity (for example, providing drought-tolerant prairie landscape design education and rebates on prairie plants);

e. Empowering citizens and communities to develop water conservation plans and report on progress toward meeting community conservation efforts (for example, promoting the purchase of low-flow toilets and dual flush toilets);

f. Working with the Province of Manitoba to change building codes for new homes to specify 3/6 litre dual flush toilets; and

g. Ensuring that existing sewer and water rate structures are consistent with the principle of demand-side management.

7-2 WASTEWATER MANAGEMENT

WHAT IS THE ISSUE?

The City has an extensive wastewater collection and treatment system to ensure a healthy aquatic environment in the local rivers and to provide protection of public health and property. Until 1960, Winnipeg's sewers were designed to convey rainwater and snowmelt runoff and wastewater together in a single pipe system referred to as "combined sewers." Combined sewers service about 30% of Winnipeg. During heavy rainfall or snowmelt the runoff rate may exceed the capacity of the interception and treatment systems. Runoff and wastewater flows into the Red and Assiniboine Rivers causing a combined sewer overflow (CSO). Local rivers experience about 18 CSO's on average on a citywide basis during the recreation season (May 1 to September 30).

Ammonia in the City's discharges can be acutely or chronically toxic to aquatic life. The City has undertaken site-specific toxicity studies to define the requirements to protect local aquatic species. Managing the nutrients in the City's discharges, primarily nitrogen and phosphorous, would assist in the control of algal blooms in Lake Winnipeg. Evolving regulatory requirements and issues emerging as a result of scientific studies on ammonia control, combined sewer outflow mitigation, and nutrient reduction are major factors influencing the next generation of wastewater collection and treatment improvement initiatives. The City is committed to working with the Province to develop a nutrient management strategy for the Lake Winnipeg watershed.

WHERE ARE WE NOW?

Winnipeg's wastewater collection and treatment system consists of 1,034 kilometres of combined sewers, 1,182 kilometres of wastewater sewers, 1,372 kilometres of land drainage sewers, 76 pumping stations, 3 treatment facilities, and 76 storm water retention basins. Under normal dry weather conditions, all of the wastewater collected is given full secondary treatment before it is discharged to the Red or Assiniboine Rivers. During wet weather or snowmelt, land drainage runoff is discharged to the local rivers and streams via 231 land drainage outlets or 79 combined sewer outfalls.

Since 1978, the City has spent in excess of $200 million to upgrade its wastewater treatment facilities to protect public health and local rivers. The South End and West End Water Pollution Control Centres comply with Provincial microbiological objectives for primary recreation. In December 2002, City Council approved a plan to improve Winnipeg's wastewater treatment system. The plan contains a prioritized list of environmental initiatives that will be undertaken in accordance with a financial plan that recognizes competing priorities. The plan includes:

- Completion of disinfection facilities at the North End Water Pollution Control Centre (NEWPCC) to comply with microbiological objectives
- Development of ammonia control facilities (centrate treatment) at the NEWPCC
- Anticipating the potential requirement to reduce nutrient concentrations (nitrogen and phosphorous) from treated wastewater effluents
- Undertaking structural modifications to the combined sewer system to reduce the number of overflows from an average of 18 events to 4 events per recreation season
- Managing treated biosolids, reviewing the land application of biosolids, and investigating the potential for alternate uses for biosolids

Sewer back-up and basement flooding can also occur during periods of heavy rainfall. As a result, the City's Basement Flood Relief Program was initiated to reduce the likelihood of a back-up of wastewater from the collection system into basements. The City has spent $169 million (2002 dollars) on this program and estimates that an additional $110 million will be required to include all combined sewer districts. The separate sewer districts are to be studied to define relief requirements and costs.

n September 2002, a failure of the main pumping system at the NEWPCC main pumping station resulted in the discharge of raw sewage to the Red River at the rate of 185,000 cubic metres per day over a period of 57 hours. This accident increased citizen concern over wastewater treatment in Winnipeg.

POLICY OBJECTIVE

The City of Winnipeg is committed to developing and implementing state-of-the-art and cost effective wastewater treatment methods to reduce the environmental impact of wastewater as well as protecting public health and property. The City will continue to demonstrate leadership in exploring fiscally and environmentally innovative sustainable solutions to wastewater treatment.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on Wastewater Management for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a.Developing innovative wastewater management demonstration projects within city operations (such as graywater

b. recycling, green rooftops, rainwater cisterns, composting toilets, and dual flush toilets); and

7-2 THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

c. Continuing to empower communities and citizens to reduce their use of the sewage system (for example, encouraging the purchase of 6 litre ultra-low flush toilets and 3/6 litre dual flush toilets);

d. Advising citizens to redirect their roof drains onto lawns and into rain barrels;

e. Encouraging citizens and communities to decrease the concentration of pollutants in their wastewater;

f. Exploring with other levels of government the possible use of incentives for using environmentally friendly soaps and household cleansers;

g. Providing information on proper disposal of Household Hazardous Waste; and

h. Ensuring that the City's existing sewer rate structure promotes the principle of demand side-management, and emphasizes the principle of social and intergenerational equity.

WHAT IS THE ISSUE?

Winnipeg's waterways have a significant impact on the health of its citizens, its economy, the ecological health of the city, and the quality of the urban environment. Most of the creeks, seasonal streams, and coulees that once carried surface runoff into the Red, Assiniboine, and Seine Rivers, and other tributary streams, have been filled. Thus, the drainage is now directed into a land drainage system that consists of sewer pipes, ditches, drains, and storm water retention ponds.

Runoff is the movement of water, usually from precipitation, across the earth's surface toward stream channels, lakes, wetlands, and other surface depressions. Shoreline vegetation traps and absorbs polluted runoff making shorelines effective natural filters and buffer zones. Shorelines are also breeding grounds, nurseries, food sources, shelters, and hiding places for many species. All of Winnipeg's major rivers and creeks have been modified making high-quality riparian habitat rare.

The responsibility for waterways, shoreline habitat, and surface water runoff is shared among all levels of government. The federal government is responsible for waterway navigation aids and fisheries through the Department of Fisheries and Oceans (DFO). Recently, DFO regulations have become increasingly strict with respect to the impact of riverbank development projects (as these affect fish habitat). The DFO has stipulated that no net loss of riparian habitat will be permitted in riverbank development projects. The provincial government is responsible for land drainage, and they have expressed their intention to assess the effect of surface drainage discharges on river water quality.

WHERE ARE WE NOW?

Approximately 45% of all waterfront property is owned by the City of Winnipeg. The City employs a riverbank management engineer and convenes a Riverbank Management Committee. The Water and Waste Department regulates land drainage through a Sewer By-law. The City has completed a riverbank stability characterization study that identified the stability and condition along the 108 kilometres of City-owned waterfront property. Twelve priority riverbank sites have been selected for ongoing stabilization. The City actively seeks partnerships with other levels of government and community groups interested in the restoration of the City's creeks and streams. The Naturalist Services Branch, together with community groups and volunteers, has undertaken naturalization projects along the banks of numerous streams and creeks within the City of Winnipeg. The Branch has also reduced the amount of mowing on creek and stream banks and is currently reducing the amount of mowing on riverbanks along the Assiniboine and Red Rivers. In addition, the City will allow "wetland"-style storm water retention basins in new residential areas in accordance with the criteria for storm water management as adopted by City Council. This approach will have positive ecological impacts for Winnipeg's landscape and wildlife.

POLICY OBJECTIVE

The City of Winnipeg is committed to preserving high-quality riparian habitat and naturalizing disturbed riparian areas. The City will continue to recognize the environmental and economic importance of protecting and enhancing stream banks and the quality of land drainage runoff.

KEY STRATEGIES

The following items are presented as suggestions toward developing a priority plan on Waterways, Shoreline Habitat, and Surface Water Runoff for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Rehabilitating streams and studying the use of vegetated swales where appropriate as a means of conveying runoff overland; and

b. Situating walking and cycling trails adjacent to riparian areas and integrating riparian areas into the city's network of trails and greenways.

7-3 THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

c. Providing citizens and communities with the resources to manage ecologically sensitive riverbank property;

d. Developing education programs geared towards preventing the contamination of surface water runoff; and

e. Continuing to work with community groups that are committed to restoring riparian areas.

8-1 INSECTICIDES AND LARVICIDES

WHAT IS THE ISSUE?

Insecticides and larvicides are chemical substances designed to kill insects (insecticides) and insect larvae (larvicides). They belong to the family of chemicals known as "pesticides." Geography, topography, soil conditions, climate, and human activities make the City of Winnipeg susceptible to a host of unwanted insect pests. Winnipeg lies on the Red River floodplain, the flat lakebed of what was once glacial Lake Agassiz. As a result, water accumulates and our clay-based soils further slow its drainage. The amount of standing water in the region is increased by the actions of landowners who allow water to collect on their property. All of this creates abundant habitat for mosquitoes. Mosquitoes can be annoying. They can detract from certain outdoor activities during some parts of the day. Most insect species found here pose no significant threat to our ecology, economy, or health. There is, however, the possibility that a very small proportion of Winnipeg's mosquitoes may carry dangerous diseases such as Western Equine Encephalitis or West Nile virus. Such factors favour the use of chemicals to control mosquito populations. However, the noted increase in chemical sensitivities among Winnipegers and community advocacy in favour of the adoption of the precautionary approach are reasons to limit the use of chemical pesticides and larvicides. The matter has prompted a great deal of debate in the City of Winnipeg.

WHERE ARE WE NOW?

Mosquitoes, defoliating insects, and the elm bark beetle are currently the central focus of the City's insect control strategy. The City of Winnipeg's preferred method of mosquito control is Integrated Pest Management (IPM). The IPM approach includes the elimination of standing water, sanitation, and the use of larvicides. Typically, 85% of the Insect Control Branch's operating budget is spent on mosquito larviciding. In accordance with the IPM approach, chemical fogging for adult mosquitoes is carried out only once populations have exceeded a certain level. With the recent appearance of the West Nile virus, mosquitoes are increasingly viewed not only as a nuisance, but also as a health hazard. Balancing the needs of individuals susceptible to the West Nile virus with the needs of individuals sensitive to insecticides has become a complex issue.

In the November 2002 poll commissioned by the City of Winnipeg Civic Environmental Committee, 89% of respondents indicated that they are supportive of civic investment in environmentally friendly alternatives to chemical pesticides. In a separate question, 44% of those polled indicated that they are more concerned about pesticides now than they were two years ago.

POLICY OBJECTIVE

The City of Winnipeg will work toward the development and implementation of cost-effective and environmentally friendly methods of controlling insect pests. The City will also seek to educate citizens in cultural and biological pest control techniques.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on insecticides and larvicides for the City of Winnipeg. These suggestions should not limit Council from exploring other options, but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Phasing out chemical pesticides as environmentally friendly alternatives become available, and using cultural practices to reduce insect pest habitat on City owned properties;

b. Adopting the precautionary principle with respect to chemical and biological insect pest controls;

c. Ensuring that the use of chemical insecticides and larvicides does not have an adverse effect on biodiversity within the city;

d. Demonstrating innovation in pest management programs (for example, by increasing habitat on City-owned properties for species of animals that prey on pests), researching non-chemical methods of pest control used in other municipalities and conducting trials using alternatives to conventional pesticides and larvicides, establishing Winnipeg as a Centre for Excellence in environmentally friendly mosquito control; and

e. Working toward environmental sustainability by setting pesticide reduction targets and reporting annually on results.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

f. Empowering citizens and communities by providing programmes and educational support to help them reduce and, eventually, eliminate insecticides and larvicides from use on private property;

g. Working towards the elimination of pesticides from privately owned properties; and

h. Encouraging the use of residential attached screened porches and detached screened enclosures as a safe and effective method of mosquito protection.

WHAT IS THE ISUE?

Herbicides and fungicides are chemical substances designed to kill plants (herbicides) and fungi (fungicides). They belong to the family of chemicals known as "pesticides." Increased habitat disturbance, accidental introduction of non-native plant species, and the effects of global climate change have contributed to a loss of plant biodiversity in Winnipeg. While some invasive species pose a threat to native flora and fauna, most pest species pose no significant threat to our economy or to human health. Nevertheless, often these pests are eliminated for cosmetic reasons or because they are perceived as a nuisance. In accordance with the Manitoba Noxious Weeds Act, the Integrated Pest Management Services Section of the Department of Public Works is mandated to reduce nuisance weeds to an acceptable level within the city. Manitoba Environment has been monitoring surface water in the province for pesticide residues since 1972. Levels of 2,4-D are slightly elevated in the Red River north of the City of Winnipeg, which might suggest over-use of this pesticide.

There is a great deal of community concern surrounding the possible health impacts of the use of chemical herbicides. Of particular worry is their use by individual homeowners. The landscaping industry has also indicated that it is necessary to look at how such chemicals are being used. The industry has stated that limiting their use to professional licensed applicators might have a real impact on any potential health risks.

WHERE ARE WE NOW?

The Parks and Open Spaces Division of the City of Winnipeg has adopted an Integrated Pest Management (IPM) strategy. This includes limited spraying for broadleaf weeds, mowing weeds before they seed, mulching plant beds with wood chips, and using superheated steam to eliminate weeds close to play structures. Approximately 60% of all weeds are controlled through mowing. Today, less than 1% of the City's IPM budget is spent on weed control through herbicides. In addition, biological controls such as the use of beetles to control purple loosestrife, soil aeration, top dressing, and enhanced cultural practices are used in the control of weeds. The City has undertaken many communications initiatives. These include a customer service line, better signage at spray sites, and the co-sponsorship of public workshops on organic lawn care. Due to increased concern over the health effects resulting from the use of chemicals on City property, the City of Winnipeg established the Weed Control Advisory Committee. This committee recommended that funds be allocated toward, first, an annual education campaign to increase awareness of alternative Integrated Pest Management strategies and, second, continued efforts at pesticide reduction.

The Weed Control Advisory Committee undertook a survey of citizens to explore public attitudes and practices relating to weed control. This survey found that 53.7% of respondents used herbicides on their properties to control weeds and that over 95% of those who used lawn chemicals did so on an annual basis. 90% of respondents had not heard of Integrated Pest Management and 60.5% would not tolerate a significant increase in dandelions, even if this resulted from a reduction in the use of herbicides. Responses to the survey underscore the need for public education on weed control and the health and environmental risks associated with herbicides. Citizen tolerance for certain weed species may need to be increased.

POLICY OBJECTIVE

The City of Winnipeg will work towards the development and implementation of cost-effective and environmentally friendly methods of weed control. The City will also work to educate citizens and communities on cultural and biological weed control methods.

KEY STRATEGIES

The following items are presented as suggestions towards developing a priority plan on herbicides and fungicides for the City of Winnipeg. These suggestions should not limit Council from exploring other options but do provide Council with key solutions for success.

THE CITY OF WINNIPEG COULD MAKE ITS OPERATIONS MORE SUSTAINABLE BY CONSIDERING THE FOLLOWING OPTIONS:

a. Phasing out chemical herbicides and fungicides as environmentally friendly alternatives become available and eliminating the cosmetic use of chemical pesticides on City-owned property as environmentally friendly alternatives become available;

b. Adopting the precautionary principle with respect to the use of herbicides and fungicides in city operations;

c. Ensuring that the use of chemical herbicides and fungicides does not have an adverse affect on biodiversity within the city;

d. Ensuring frequent review and evaluation of the City's Integrated Pest Management strategy;

e. Continuing to demonstrate innovation by researching non-chemical methods of pest control used in other municipalities, conducting trials using alternatives to conventional herbicides and fungicides, and reporting annually on the results of these trials;

f. Completing an annual report on the City's progress in meeting its established pesticide reduction objectives; and

g. Reporting annually on the effectiveness of the City's Integrated Pest Management program.

THE CITY OF WINNIPEG COULD HELP TO FOSTER SUSTAINABLE BEHAVIOUR AMONG ITS CITIZENS AND WITHIN ITS COMMUNITIES BY CONSIDERING THE FOLLOWING OPTIONS:

h. Empowering citizens and communities by providing programmes and educational support to help them reduce and eventually eliminate herbicides and fungicides from private property;

i. Educating citizens on the health impacts of pesticides;

j. Educating the public on organic pest control methods and cultural practices that can be used to reduce pest habitat and deter pests; and

k. Educating the public on organic weed control methods and cultural practices that can be used to reduce weed species.

GLOSSARY

2,4-D:

introduced in 1946, this member of the phenoxy family of herbicides was the first successful selective herbicide developed. It rapidly became the most widely used herbicide in the world.

AQUIFER:

a geologic formation that contains sufficient saturated materials to be capable of storing water and transmitting water in usable quantities to a well or spring; see other aquifer related details at http://www.epa.gov/superfund/resources/hrstrain/htmain/8defs.htm

BASEMENT FLOODING PROTECTION PROGRAM:

a City of Winnipeg initiative that sets out guidelines for the protection of property against flooding; see details at http://www.winnipeg.ca/cao/media/news/nr_2002/nr_20020604.stm or http://winnipeg.ca/waterandwaste

BIOMASS RESOURCES:

refers specifically, in this context, to the renewable resource of methane gas captured from landfill sites.

BROWNFIELDS:

former industrial, commercial, or residential sites that have been abandoned because of liabilities associated with site contamination and/or derelict structures.

CAO SECRETARIAT:

a small team of professionals with specialized expertise and a breadth of experience in administrative operations and policy analysis, strategic planning, project management, and corporate communications. The team supports the City of Winnipeg's Chief Administrative Officer by providing topical advice, exercising a corporate leadership role and maintaining a workable linkage with departments, the Executive Policy Committee Secretariat, and the Mayor's Office; see details at http://www.winnipeg.ca/cao

CAPITAL REGION COMMITTEE:

a forum for the regional cooperation of municipalities on issues of mutual interest including economic development, environment, land use and transportation; membership includes the City of Winnipeg (the province's capital), the City of Selkirk, the Town of Stonewall and thirteen rural municipalities including Cartier, East St. Paul, Headingley, Macdonald, Ritchot, Rockwood, Rosser, St. Andrews, St. Clements, St. François-Xavier, Springfield, Taché, and West St. Paul.

CAR-POOLING:

the practice of using private vehicles to transport multiple people (per vehicle) to shared destinations in order to reduce the total number of private vehicles on the road at any given time.

CIVIC ENVIRONMENTAL COMMITTEE (CEC):

a citizen advisory committee that provides advice and reports to Council on environmental and sustainable development issues; see http://www.winnipegcec.org/main/index.html for details on its mandate, membership, structure and activities.

COMBINED SEWER OVERFLOW (CSO):

an occasion that occurs approximately 18 times during the recreation season (May 1 to September 30) on which the capacity of the Winnipeg waste water treatment facilities are exceeded by the volume of combined waste water and storm water proceeding through the combined sewers; Winnipeg stopped building combined sewers in the 1950s in favour of separate waste water and storm water sewers to reduce CSO into the Red and Assiniboine rivers.

COMPOST:

the product resulting from the controlled biological decomposition of organic materials such as fruit and vegetable scraps, leaves, and wood chips; see details about composting in Winnipeg at http://winnipeg.ca/waterandwaste/pdfs/composting.pdf

COMPOSTING TOILETS:

self-contained, waterless units designed to facilitate the local decomposition of human waste and render it safe for subsurface soil application; see details regarding composting toilets and other on-site wastewater treatment at http://www.coadinc.org/Straw/COADWPdraft-Dec-2001.html

COUNCIL:

refers to the 'City Council' of Councillors elected to represent the wards of the city; see http://www.winnipeg.ca/interhom/council/default.stm for a current list of Councillors and contact information.

DEMAND SIDE MANAGEMENT:

the practice of implementing policies or measures that manage or influence the demand for a service or resource with an emphasis on decreasing the demand for services or the conservation of resources rather than increasing supply.

DISTRICT HEATING:

a system (usually centralized) that generates heat from one or more energy sources and distributes heat to residential, commercial and industrial consumers for space heating, hot water heating and industrial processes.

DUAL FLUSH TOILETS:

toilets typically designed to conserve water by allowing the user to flush with either 6 litres or 3 litres of water.

ECO-PASS PROGRAM:

a program to encourage the use of public transit in which companies that offer bus passes to their employees at a discount are given a rebate by Winnipeg Transit; see details at http://winnipegtransit.com/main/ecopass.jsp

ECOSYSTEMS:

ecological systems of interacting biotic (living) and abiotic (non-living) components through which nutrients cycle and energy flows.

ENVIRONMENTAL AUDIT:

a management tool comprising a systematic, documented, periodic, and objective evaluation of how well a project, organization or equipment is performing with the aim of helping to safeguard the environment. The audit should facilitate management control of environmental practices and assess compliance with policy objectives and regulatory requirements.

EROSION:

the removal and/or transportation of surface material, such as soil, by running water, moving ice, or wind.

EXTENDED PRODUCER RESPONSIBILITY (EPR):

the principle behind programs that broaden the responsibility of producers to include managing waste products once discarded by the consumer.

FOSSIL FUELS:

effectively non-renewable energy resources, such as oil, coal, and natural gas, which are produced through the decay of plant and animal matter.

FULL COST ACCOUNTING:

a method of accounting for goods throughout their entire life cycle including costs such as salvage, refurbishing, and disposal.

FUNGICIDES:

chemical substances belonging to the *pesticide* family of chemicals specifically designed to control, and usually kill, fungus.

GEOTHERMAL ENERGY:

heat accumulated in the earth from solar energy (heat from the sun).

GEOTHERMAL HEATING AND COOLING SYSTEM:

work by moving heat out of, or back into, the earth instead of making heat by burning fossil fuel or heating an electric element. Geothermal units can be installed in both residential and commercial buildings and are connected to the earth through high-density polyethylene pipe buried under lawns, landscaped areas, parking areas or the building itself; for details see www.hydro.mb.ca/saving_with_ps/geothermal.shtml

GRAYWATER:

non-toxic wastewater from sources such as sinks, bath tubs, and washing machines that can be intercepted and used for other purposes, such as irrigating lawns and gardens.

GREEN BUILDING:

the practice of design and construction in which the use of both capital and maintenance resources are analyzed through *full cost accounting* and minimized through the use of high-performance technologies for the sake of creating the best human habitat quality possible with the least overall impact on the natural environment; in practice, this is defined by the *Leadership in Energy and Environmental Design (LEED) Green Building Rating System.*

GREEN PROCUREMENT POLICIES:

policies that take environmental aspects into consideration in public and institutional procurement decisions and processes.

GREEN ROOF SYSTEMS:

intensive or extensive rooftop gardens and the building components that directly support them; while intensive systems intended for milder climates grow a wide range of garden species in deep soil, extensive systems intended for various climates grow moss, herb and grass species in thin soil; see a detailed discussion at http://irc.nrc-cnrc.gc.ca/fulltext/nrcc45203/nrcc45203.pdf

GREENFIELD:

an undeveloped site of land that has never contained buildings or civil infrastructure.

GREENWAYS:

corridors of protected open spaces managed for the purposes of recreation and/or conservation; usually associated with trails, they often follow natural land or water features, rail corridors or utility rights of way and are used to link communities to nature reserves, parks and historic sites.

GROUNDWATER:

water contained in an *aquifer* or any voids, cracks, or other pore spaces in clay, silt, sand, gravel or rock within the saturated zone; such water is only available to wells and springs in usable amounts if contained within an *aquifer*.

HERBICIDES:

chemical or biological substances belonging to the *pesticide* family of chemicals specifically designed to control, and usually kill plants that are considered to be weeds.

HERITAGE BUILDINGS:

Winnipeg buildings of outstanding architectural and historical merit which are to be preserved in perpetuity according to the guidelines of the City of Winnipeg Historical Buildings By-law and/or the Province of Manitoba Heritage Resources Act; see heritage building lists and details at http://www.winnipeg.ca/ppd/historic/historic.stm

HHW:

refers to "household waste."

ICI:

refers to 'industrial commercial and institutional'; ICI waste consists of all non-residential refuse including by-products of production and manufacturing, commercial activities and institutions.

INSECTICIDES:

chemical or biological substances belonging to the *pesticide* family of chemicals specifically designed to control (usually kill) insects.

INTEGRATED PLANNING MODEL:

an overall approach to civic planning that achieves consistency and coordination among constituent land use planning, transportation planning and infrastructure planning according to a single but inclusive vision of intended urban development; see details at

http://www.winnipeg.ca/interhom/about_winnipeg/inside/org_plan_perf.stm

INTERGENERATIONAL EQUITY:

the practice of ensuring that the policies and decisions made today will not compromise the ability of future generations to succeed.

INTEGRATED PEST MANAGEMENT (IPM):

An approach to managing pests that combines biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks.

INTERNAL ADMINISTRATIVE COORDINATING COMMITTEE (IACC):

a City of Winnipeg committee comprised of representatives from all departments with the mandate to assist the *Civic Environmental Committee* in the development and implementation of proposed environmental policies.

LARVICIDES:

chemical or biological substances specifically designed to kill insect larvae.

LCD:

refers to the unit 'litres per capita per day' used to measure the consumption of fresh water.

LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED) GREEN BUILDING RATING SYSTEM:

a voluntary standard for developing high-performance sustainable buildings which emphasizes state of the art building strategies including sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality; see details at http://www.usgbc.org/LEED/LEED_main.asp

LIVING PRAIRIE MUSEUM:

a 14 hectare (32.5 acre) tall grass prairie preserve and interpretive centre established in 1968 as a home for over 160 species of prairie plants and a great array of prairie wildlife within the City of Winnipeg at 2795 Ness Avenue. For more information see www.winnipeg.ca/cms/

NATURAL RESOURCES CANADA'S C2000 PROGRAM:

a small demonstration program for high-performance buildings developed and sponsored by the CANMET Energy Technology Centre (CETC) of Natural Resources Canada with emphasis on energy performance, water conservation, maintenance of site ecology and improved levels of indoor environmental quality; see details at http://www.buildingsgroup.nrcan.gc.ca/projects/c2000_e.html

NATURALIZATION PROJECTS:

the conversion of a managed (mowed and weeded) landscape into a natural one through the allowance of natural succession from wildflower species to woody plants; apart from the optional creation of ponds or tree planting, such a landscape requires little or no long term care.

NATURALIST SERVICES BRANCH:

a municipal department with the mandate to protect and manage wildlife habitat within the City of Winnipeg; see details at http://www.winnipeg.ca/cms/ape/naturalist/naturalist_services/test.stm

NEW DEAL:

an initiative of Winnipeg's Mayor Glen Murray to increase the municipal share of current and future tax revenue in order to make the level of expected services sustainable; see details at http://www.winnipeg.ca/cao/media/news/nr_2003/nr_20030123.stm

NGOS:

refers to "non-governmental organisations" which are usually private sector groups operated in the interest of the public good on a not-for-profit basis.

PERVERSE SUBSIDY:

the socio-economic phenomenon in which environmentally responsible individuals and organizations subsidize the non-sustainable behavior of others.

PESTICIDES:

chemicals or any other substances used for preventing, repelling, destroying or otherwise controlling or mitigating any pest; for a more extensive definition go to http://www.pestmanagement.co.uk/expert/ecotox/pcide_def.shtml

PLAN WINNIPEG 2020:

City Council's long-range policy document intended to guide Winnipeg in the twenty-first century by addressing the broad physical, social, economic and environmental conditions in the city; see details at http://winnipeg.ca/interhom/about_winnipeg/inside/plan_winnipeg/default.stm

POLLUTER PAY:

a practice in which users of publicly provided services are responsible for the full cost of these services, including the costs to the environment.

PRECAUTIONARY PRINCIPLE:

a principle of conduct requiring that when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.

RIPARIAN HABITAT:

includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterized by alluvial soils and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas.

RUNOFF:

the movement of water, usually from precipitation, across the earth's surface towards stream channels, lakes and other surface depressions.

SENSITIVE LANDS PLAN:

a plan by the City of Winnipeg to inventory important natural habitat areas within Winnipeg and develop tools and processes to ensure that sensitive lands are properly managed as required by the Province of Manitoba under the *Plan Winnipeg* Act.

SMART GROWTH:

urban growth guided by policies that capitalize on resources by considering issues related to community quality of life, urban design, economics, the environment, health, housing and transportation. For more information see www.smartgrowth.org

SUSTAINABILITY:

refers to the management of development in a manner that meets the needs of the present without compromising the ability of future generations to meet their own needs; in practice, it results in development that maintains or enhances economic opportunity and community well-being while protecting and restoring the natural environment upon which people and economies depend.

SWALES:

elongated, heavily vegetated depressions in the land surface that direct storm water to flow into primary drainage channels while allowing some of the storm water to infiltrate into the ground.

TAX SHIFTING:

a method of moving the burden of taxes away from positive economic activities, such as business and human capital, toward negative activities, such as pollution and resource waste.

TELECOMMUTING:

the practice of working from a remote location, usually one's home, made possible by telecommunications and used as an alternative to a workforce commuting to and from a traditional place of work, such as an office.

TRANSPORTATION DEMAND MANAGEMENT (TDM):

any strategy that encourages efficient transportation behaviour including strategies to reduce private vehicle use in favour of more communal transportation, such as buses, and more active modes of transportation, such as cycling and walking. More information can be found at www.vtpi.org

US GREEN BUILDING COUNCIL:

a coalition of leaders from across the building industry working to promote buildings that are environmentally responsible, profitable and healthy places to live and work; see details at http://www.usgbc.org/AboutUs/whoweare.asp

WASTEWATER EFFLUENT:

water that flows from a treatment plant after it has been treated.

CONTRIBUTIONS AND ACKNOWLEDGEMENTS

The Chair extends his thanks to the following for their contribution to the strategy:

The Civic Environmental Committee (past and present members):

Bob Foster
Douglas Johnson
Michelle Kading
Ken Klassen
Kelly Kuryk
Rodney McDonald
Ken McKinnon
Toby Maloney
Shannon Stunden Bower
Terri Willard
Tony Zienkiewicz.

Staff:

James Allum, Interim Environmental Coordinator
Andrew Cowan, Environmental Coordinator
Neil Cunningham, Policy Assistant
Molly Johnson, Policy Assistant

Internal Administrative Coordinating Committee:

Andrew Cowan (Chair), Environmental Coordinator, EPC Secretariat;
James Allum, Senior Consultant, Strategic Management Division, CAO Secretariat;
Jacquie East-Ming, Senior Planner (*Plan Winnipeg*), Property Planning and Development;
Betty Holsten Boyer, Manager, Financial and Business Initiatives;
Bill Larkin, Manager of Engineering, Public Works;
Bill Menzies, Manager of Planning and Schedules, Transit;
Peter Parys, Environmental Health Services Administrative Coordinator, Community Services;
and Mike Shkolny, Manager of Engineering, Water and Waste

Stakeholder contributions:

Campaign for Pesticide Reduction! (CPR!)
Coalition to Save the Elms
Concerned Residents of Winnipeg (CROW)
Landscape Manitoba
Manitoba Association of Landscape Architects (MALA)
Manitoba Conservation
Manitoba EcoNetwork, including:
- Chemical Sensitivities Manitoba
- Council of Women of Winnipeg
- Eco-MAFIA
- Institute of Urban Studies
- University of Manitoba Recycling and Environment Group (UMREG)

Manitoba Energy Science and Technology
Manitoba Environmental Industries Association
Resource Conservation Manitoba (RCM)
Save Our Seine (SOS)
Social Planning Council of Winnipeg, Environment Committee
Winnipeg Chamber of Commerce
Winnipeg Trails Association

Thank you to Donald Benham and Sheldon McLeod for copy editing assistance.

Town Hall Meeting Attendees:

Bob Adamson
Dorothy Adrian
Dallas Alderson
M Alexander
Inonge Aliaga
Peggy Bainard Aicheson
Rob Altermeyer
Len Anderson
Steve Ashton
Mike Balshaw
Diane Banash
Bob Baraniuk
Michael Barclay
Stephan Barg
Brent Barreti
Adam Batty
Brittany Bella
Chris Benson
Kyle Bergen
Dan Besner
Chris Bloom
Emily Blunden
Rick Borland
Ed Boudreaux
Stefan Bourrier
WS Boulton
Sean Bracken
Roxanne Breton
Sasha Brown
Valdene Buckley
Tom Carter
Len Chambers
Karina Cardona
R Charlesworth
Richard Chaput
Jeena Chartier
Chris Cherry
L Church
Liz Clayton
Dale Clark
Cheryl Corman
Allison Cook
Yanic Coquereau
Nicole Courrier
John Cowan
Dennis Cunnigham
Tamara Cunningham
Ted and Coney Cunningham
Dave Danyluk
Conrad Datzkiw
Doug Dobchuk
Peter de Graaf
Glen Doney
Greg Doroschuk
Bob Downs
Marissa Dudych
Jennifer Duggan
Jessica Dupont
Liz Dykman
Melissa Dziedzic
Jacquie East-Ming
Chantal Emond
Linda Eryou
Tom Ethans
Andrea Evans
Don Everitt
Debra Fehr
Brian Finnegan
Bob Foster
Stacey Franklin
T Fuglem
James Gacek
Kevin Gallays
H Ganzoury
Carolyn Garlich
James Giesbrecht
Jillian Golby
Linda Goossen
Martin Grady
Heather Graydon
Ian Greaves
Lindsay Gulenchyn
Heather Hagen
Patrick Hamilton
Irene Hanuta
Lisa Hardess
Rick Harp
Jeff Hay
Sylvie Hebert
Cathy Hellsten
Tim Hibbard
Veronica Hicks
Jenny Hillard
David Hinton
John Hockman
Andy Horaska
Carlyn Huchko
Kristina Hunter
Ashton Hurley
R E Ireland
Courtney Jackson
Jennifer Jantz
Greg Jasper
Jim Jaworski
Ellen Johannesen
Kyla Johnston
Mark Jordan
Yu Jung Kang
Melissa Kanne
Richard Kanne
Alec Katz
Amanda Kauk
Stuart Kaye
Ken Klassen
Ralph Klenke
Natasha Knautz
Rob Koch
Kelsey Koop
Kristine Koster
Apoorva Krishnan
Richard Kula
Michelle Kuly
Bob Laidler
Andrea Lamboo Miln
Monique LaPlante
Serge LaRochelle
Carlee Leclerc
Janet Ledger
Kim Lee
Christopher Leo
Amanda Leskiw
David Lettner
David Lind
Karen Lind
Anne Lindsey
Kaitlyn Lischynski
Jeff Lowe
Brigette Madder

Lynwood Madder
Sandra Madray
Jen Malzer
M.L.Malzer
Halley Martin
Shannon Martin
Warren Martin
Michelle McDonald
Doug McEwan
Dan McInnis
Paul McNeil
Linda McPherson
SW McKenzie
Gord McGonigal
Ross McGowan
Micah Melnyk
Steve Melnyk
Sylvie Melnyk
Ted Melnyk
Melanie Michaluk
Jesus A. Miguel
Peter Miller
Lucille Mollot
Vic Mollot
Ted Molnych
Jeanette Montufar
Dan Moroz
Ira Morriseau
Nelson P. Morrison
Ron Munro
John Neill
Shane Nestruck
Don Neville
Miyoung Noh
T&S Osterman
Rosaline Pachal
Ashley Paton
Andrea Patenaude
Rick Penner
Tamara Petkau
Sara Piercy
James Platt
Tina Portman
Jeff Pratte
Barry Prentice
Linda Prociw
Lindsay Prociw
Mark Queen
Rene Remillard
Shannon Refuik
Michael Rennie
Melanie Richard
Michelle Richard
Julio Rivas
Emily Robbins
Shayne Robinson
Kevin Robson
Kyle Roche
Warren Rospan
Dianna Roy
Patti Ryan
Manpreet Saini
Tim Sale
Beth Sanders
Doug Scott
Natalie Seaba
Nancy Sheng
Brendan Smith
Don Smith
Dean Schilling
Dave Schultz
Jim Shiells
Randall Shymko
P Skinner
Robert Stangl
Robyn Stanwick
Christine Stasivls
Doug Stiles
Gary Stromner
Larissa Sveinson
Jeff Swereda
Manny Sylvester
Nick Szoke
Chris Tarrant
Sharon Taylor
Nick Ternette
Amanda Tetrault
E Thompson
Jesse Thompson
Todd Thompson
Jim Thomson
Anjanette Tomac
Britany Towes
Corey Towes
Sandy Trudel
Dave Turner
Jeff Turner
Rachel Van Caeseele
P Vincent
Matt Vinet
Andrew Vuong
R Warteng
Ken Weibe
Marshall Weibe
Sharon Wen
Catherine White
Glenda Whiteman
Heather Whittick
Ian Wight
Ajaleigh Williams
Noah Yauk
Karen Zalac
Terry Zdan
Amy Zhang

BIBLIOGRAPHY

Baronas, Al. *Strategic Trails Plan for Winnipeg*. Algis Corporation and the Winnipeg Trails Association. July 2003.

Civic Environmental Committee Citizen Poll. November 2002

Cook, Allison. *Active Transportation as an Integral Component of Urban Transport: Factors Influencing Winnipeg*. March 2003

Direction to the Future: The Guide to Better Transit for Winnipeg. Final Report. City of Winnipeg, January 7, 2000.

Financial Management Plan, Mayor Glen Murray, Adopted by Council April 25, 2001

Lennon, Richard and Christopher Leo. *"Stopping the Sprawl: How Winnipeg Could Benefit from Metropolitan Growth Management Strategies for a Slow-Growth region,"* Canadian Centre for Policy Alternatives, January 2001.

National Roundtable on the Environment and Economy Brownfield Redevelopment Strategy, 2003.

Plan Winnipeg 2020 Vision – A Long Range Policy for City Council City of Winnipeg, By-law 7630/2000

Winnipeg Bicycling Facilities Study, Final Report. City of Winnipeg Streets and Transportation Department and Marr Consulting and Communications. February 2003.

Winnipeg Transplan 2010: Moving Toward Solutions, City of Winnipeg, 1998.

i *Plan Winnipeg 2020 Vision*, City of Winnipeg, 2000. 10.

ii Mayor Glen Murray, *Financial Management Plan*, adopted by Coulcil, April 25, 2001.

ii Transportation Canada, 2002.