Strategic Infrastructure Reinvestment Policy

Report & Recommendations

"There must be a commitment to policy and direction with no room for ambiguity."

Plan Winnipeg
... Toward 2010

Table of Contents

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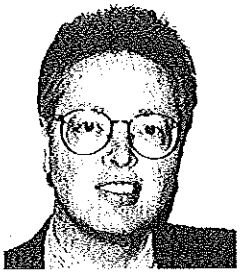

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Note to Reader

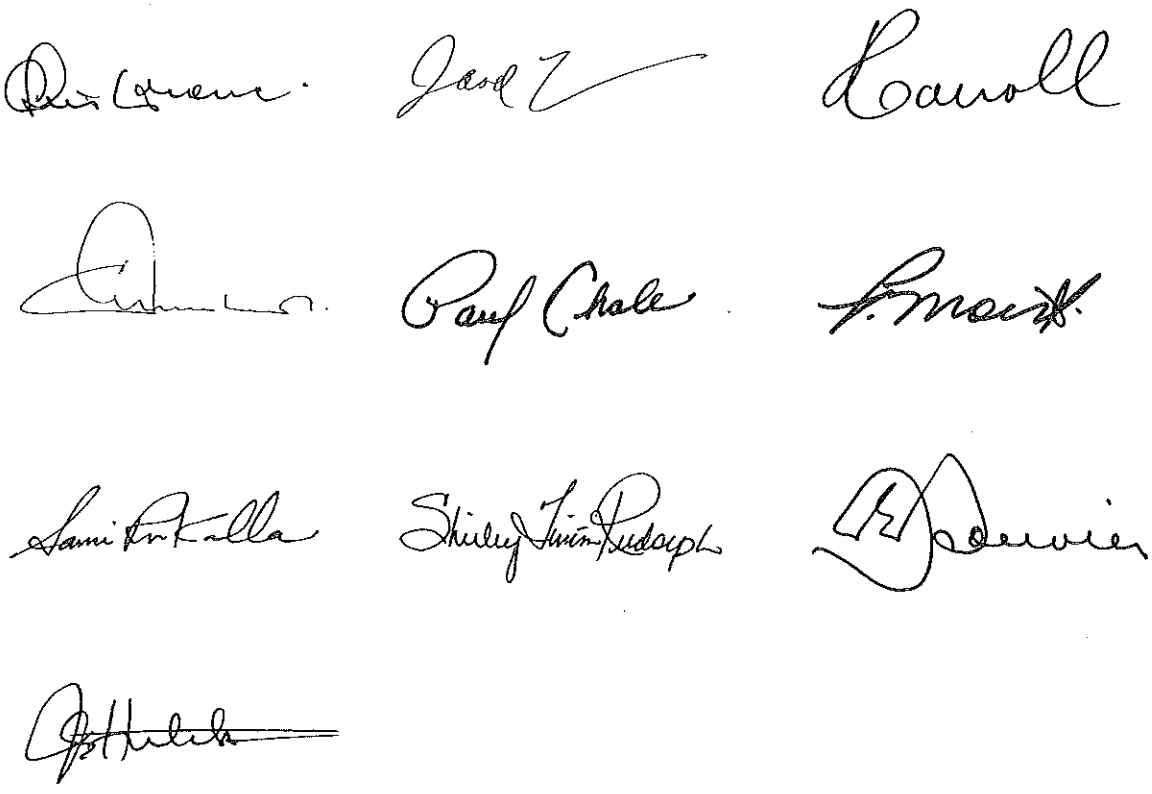
This report represents the end of a long road of research and discussion for the SIRP Task Force. More importantly, it marks the beginning of a new road toward infrastructure solutions.

Every attempt has been made to ensure that this report has been written in a reader-friendly manner, defining necessary technical terminology along the way. Many useful references have been sourced throughout, and are listed in the accompanying appendices and bibliography.

The SIRP Task Force members acknowledge with sincere appreciation the work done by Chris Lorenc and Bill Carroll, who are primarily responsible for authoring this report.

Many resources have been called upon to compile the information contained herein. Every effort has been made to ensure that all the figures in this report are as current and accurate as possible. The SIRP Task Force members acknowledge all City of Winnipeg departments and staff who assisted in the preparation of this report. Without their expertise and dedication — in providing research, consultation, and administrative support — we could not have accomplished our task. To those individuals, too numerous to mention, we sincerely say thank you.

— The SIRP Task Force



Executive Summary

In April 1995, the Committee on Works and Operations recognized the need to adopt a Strategic Infrastructure Reinvestment Policy (SIRP) for Winnipeg. It established a volunteer task force comprising a cross-section of participants from government, business, labour and academic communities.

The SIRP Task Force was charged with the responsibility of drafting a plan with the following goals:

- document the current infrastructure condition
- identify investment needed for upgrade and strategic investment
- establish a plan to fund infrastructure investment
- identify such legislative and other amendment(s) required to facilitate implementation of the financial plan, and
- recommend a "Strategic Infrastructure Reinvestment Policy".

The Task Force's view is that any infrastructure policy that the City adopts must be sustainable. Sustainable infrastructure decisions are ones that make sense for today **and** tomorrow. They should be referenced against key elements, including:

- cost/benefit analysis
- life cycle costing
- management of existing resources
- appropriate financing decisions
- strategic product selection
- use and application of new technology and new products
- infrastructure technology research
- development of economic opportunities resulting from the challenges of infrastructure investment.

Practicing these concepts will ensure that we do not pass on today's problems to future generations.

The purpose of the report is not to identify a specific dollar amount to remedy the situation. Instead, it is designed to identify infrastructure needs, investment options, and to create a policy framework that arms City Council with knowledge and consequences of its infrastructure decision-making.

Winnipeg has a large infrastructure deficit — that is, *the difference between what is currently being dedicated to infrastructure maintenance and renewal, and what needs to be invested.* Such a condition is common to most North American cities. The Federation of Canadian Municipalities and McGill University published the *"Report on the State of Municipal Infrastructure in Canada" (January 1996)* which then estimated Canada's municipal infrastructure deficit at $44 billion.

The City of Winnipeg undertook a limited analysis of the state of its infrastructure and published the *Report on Infrastructure 1994.* This report reviewed the state of the City's bridges, streets, alleys, sidewalks and water and sewer mains, and determined that by the year 2000, this infrastructure may require approximately $525 million (1994 dollars) in maintenance and renewal works. The Task Force notes that by including the City's parking structures, buildings, swimming pools, solid waste and electric utility components, the total infrastructure maintenance and renewal works backlog easily exceeds $750 million.

It is worthy to note that Winnipeg's infrastructure currently represents a cumulative public investment of approximately $14.4 billion.

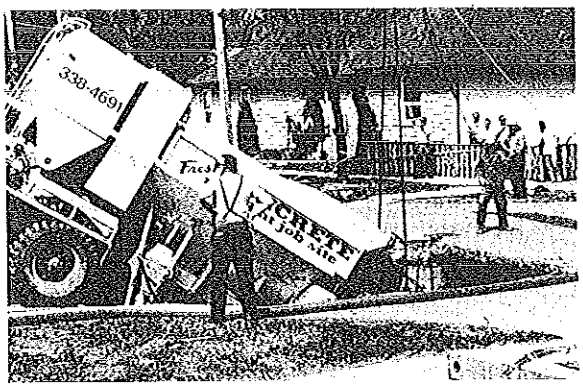
The SIRP Task Force report attempts to identify the magnitude of the problem facing Winnipeg by documenting the current condition and outlining reinvestment needs. To do so, this report evaluates historical investment, required annual investment and average annual investment budgeted in the following categories:

- Structures: Bridges, Underpasses & Culverts
- Pavements: Streets, Lanes, Sidewalks
- Underground: Watermain and Sewer
- Other Municipal Infrastructure: such as hydro facilities, buildings, parkades, bus fleets, sewage treatment plants, swimming pools, arenas, water reservoirs, aqueduct, and pumping stations.

The major infrastructure outlined above requires approximately $202 million per year in required annual maintenance and renewal works. In reality, only about $120 million per year has been budgeted. While the City's efforts in maintaining the infrastructure with limited resources is notable, the annual infrastructure investment deficit of almost $82 million must be addressed. As in other jurisdictions, the City of Winnipeg's infrastructure budgets fall seriously short of prudent asset management.

The infrastructure deficit facing Winnipeg can be attributed to a number of significant factors:

- old infrastructure
- severe climate and soil conditions
- inadequate maintenance
- inadequate and non-uniform standards
- changing growth patterns
- exurban development
- financial restrictions
- cash accounting methods
- insufficient analysis
- absence of policy.



Deferring required investment in infrastructure maintenance and renewal results in eventual costs of repair as much as three to five times higher — depending upon the specific asset. It also contradicts a fundamental principle of sustainability, namely that each generation should pay for its share of use and enjoyment of intergenerational assets.

Maintaining existing infrastructure is not our only concern. New infrastructure requirements to meet new federal or provincial regulations, accommodate growth, facilitate economic opportunities and provide flood protection over the next 10 - 20 years are estimated to be an additional $1.4 billion.

Upon reviewing our infrastructure condition and the reasons for it, the SIRP Task Force concludes that there are three key issues:

1) we must invest more into infrastructure

2) we must make strategic investments with the dollars we do have, and

3) we must find ways to reduce the magnitude of the infrastructure deficit problem.

It is essential that infrastructure spending be seen as an investment and not a cost. Infrastructure investments must be sustainable, strategic in nature, balanced in approach, and based on sound cost benefit and life cycle analyses.

Winnipeg City Council has long recognized the need for a strategic infrastructure reinvestment policy, and has articulated this commitment in three major policy documents:

- *Plan Winnipeg...Toward 2010*
- *Financial Management Plan — 10 Goals for a Stronger Financial Future*
- *Priorities for Winnipeg — Building Toward the 21st Century.*

The documented and continuing deterioration of our infrastructure, coupled with escalating costs of rehabilitation, requires immediate policy and programming attention. Sustainable infrastructure programs will only occur if they are based on sound policy and fiscally responsible principles.

The SIRP Task Force's examination of this issue resulted in development of 30 policy recommendations with respect to infrastructure reinvestment in the following categories:

- infrastructure maintenance
- new technology
- financing options
- alternative service delivery
- Winnipeg Transportation Utility
- National Infrastructure Policy
- sustainable infrastructure principles

A summary of these recommendations and a plan for their implementation follows on page **71** of this report.

Dealing with the infrastructure deficit is an important challenge. The risks of further neglect are great. Neglect creates an overwhelming future financial burden and the potential risk for public harm — and therefore, liability. Continued underfunding will result in accelerated infrastructure decay, more borrowing, and increased taxation. It will also result in infrastructure that is inefficient and substandard in capacity. The cumulative effect will result in reduced economic opportunity and a decline in Winnipeg's quality of life. Therefore, we must practically and reasonably reduce the infrastructure deficit.

By adopting a comprehensive policy-based approach to infrastructure investment — based upon knowledge and decision-making consequences — Winnipeg will not only lead by example, but will be well-poised to meet the challenges and opportunities of the new millennium.

Introduction

The SIRP Task Force

In April 1995, the Committee on Works and Operations recognized the need to adopt a Strategic Infrastructure Reinvestment Policy (SIRP) for Winnipeg. To do so, a volunteer task force comprising a cross-section of participants from government, business, labour and academic communities was established. The Task Force members are identified on page four of this document.

The challenge for the SIRP Task Force has been to devise strategies to make the seemingly impossible, possible — that is, during a time of government fiscal restraint, to direct more resources to infrastructure. Our findings and policy option recommendations for Council's consideration are outlined in this report.

Terms of Reference

The SIRP Task Force was charged with the responsibility of presenting recommendations with the following goals:

- document the current infrastructure condition
- identify investment needed for upgrade and strategic investment
- establish a plan to fund infrastructure investment
- identify such legislative and other amendment(s) required to facilitate implementation of the financial plan, and
- recommend a "Strategic Infrastructure Reinvestment Policy".

In addressing these goals, the Task Force report reflects its consensus opinion.

Report Structure

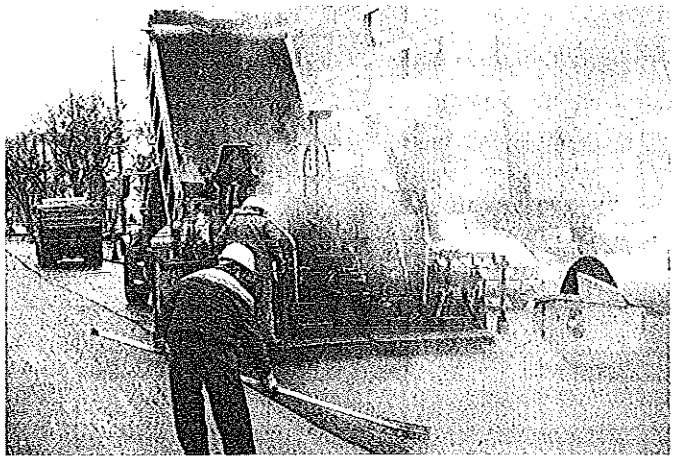
This report is designed to provide a comprehensive overview of infrastructure issues in Winnipeg. It begins by defining sustainable infrastructure and its policy context. It reviews the existing infrastructure condition, including the total estimated infrastructure deficit, and explores why this deficit has occurred. It outlines new infrastructure requirements and their associated costs. The report concludes with strategic policy recommendations, as well as a proposed implementation plan.

Report Purpose

When this report becomes public, the first question will be "What's the cost to the taxpayer?" The purpose of this report is not to identify a spending plan. Rather, it is designed to:

- identify the infrastructure investment requirements referenced against planned investment,
- provide a policy framework that arms current and future councillors with increased knowledge on the consequences of their decision-making, and
- identify options such as user fees, cash financing and alternative service delivery for investment decisions.

Within the above framework, Council can assess the merits of infrastructure investment decisions and adjudicate upon their relative priority against the backdrop of all the financial demands made upon the City.



Sustainable Infrastructure: Policy Context

In 1994, the Manitoba Round Table on Environment & Economy (MRTEE) was established by the Provincial government to create a sustainable development strategy for Manitobans. It developed *10 Principles for Sustainable Development and Six Fundamental Guidelines (MRTEE, "Towards a Sustainable Development Strategy for Manitobans", 1994)* that should guide our actions on every front, including infrastructure rehabilitation and development *(Appendix "A")*.

A sound infrastructure improves economic competitive position in the international marketplace.

These principles and guidelines are valuable, important and should be more widely embraced than they are at present. They are the basis for the *10 Principles for Sustainable Infrastructure Development (Appendix "B")* developed by the SIRP Task Force, against which we have referenced our recommendations. In short, these principles are:

1. *Efficient use of resources*
2. *Systematic decision making and long-term planning*
3. *Proper infrastructure maintenance*
4. *New technology and scientific innovation*
5. *Shared responsibility and accountability*
6. *Stewardship*
7. *Environmental management*
8. *Pollution prevention*
9. *Understanding and respect*
10. *Sustainability*

Sustainable Infrastructure Defined

Many people struggle with the meaning of sustainable development, and its relationship to infrastructure. For the purposes of this report, *"sustainable infrastructure development"* means the process of making infrastructure decisions that make sense for today **and** tomorrow.

The concept embraces the following concepts and tools:

- cost/benefit analysis
- life cycle costing
- managing the use of existing resources
- appropriate financing decisions
- intelligent product selection
- use and application of new technology and products
- supporting infrastructure technology research and application, and
- developing economic opportunities from the challenges of infrastructure investments

"... investing in public infrastructure directly augments private sector production."

Practicing these concepts will help ensure that we do not pass on our problems to future generations.

The Case for Reinvestment

Our quality of life depends upon an efficient and well-maintained infrastructure. Canada depends heavily on international trade for economic growth and prosperity. Canadian exports are equivalent to almost 40 per cent of our Gross Domestic Product (GDP); by contrast, exports are only 13 per cent of the U.S. economy *(Rubin, "Battered on All Fronts", December 16, 1997).*

To compete in international markets, as well as maintain and enhance prosperity, an efficient infrastructure is necessary. Our advantage over less developed countries exists because of our technology; our systems for moving goods, services and information; and our basic infrastructure fabric that keeps our citizens healthy and strong. As a country, we cannot afford to lose this competitive edge.

In citing examples of how infrastructure can affect quality of life, the Association of Consulting Engineers of Canada identifies the impacts of doing nothing about our municipal infrastructure as including the following:

- increased water treatment and waste water treatment costs
- diminished quality of service
- increased pollution through leakages
- higher long term renewal costs due to deferred maintenance

("Infrastructures in Canada — An Ounce of Prevention is Worth a Pound of Cure", March 1998).

All levels of government strive for full employment, economic growth and prosperity. Infrastructure investment puts people to work, replaces failing systems, and facilitates economic growth. The public generally supports infrastructure programs because of tangible results in the form of improved roads, bridges and enhanced communities. The business sector supports infrastructure investments because an efficient infrastructure improves its competitive position in the international marketplace. *Infrastructure — America's Third Deficit (Aschauer, 1991)* clearly demonstrates that *"investing in public infrastructure directly augments private sector production."*

Winnipeg is an important gateway to the international marketplace, and was ranked as one of the top five Canadian cities for exports *(Globe and Mail, Report on Business, August 1997).* Reliable infrastructure is key to maintaining this position.

The Infrastructure Deficit

In January 1985, the Federation of Canadian Municipalities (FCM) published a comprehensive report entitled *Municipal Infrastructure in Canada: Physical Condition and Funding Adequacy.* This report defined a municipal infrastructure deficit as essentially *"the difference between infrastructure investment and needs"*. In 1985, the national municipal infrastructure deficit was estimated by the FCM to be $12 billion. The report urged the Federal and Provincial governments to collaborate in a cost-shared national program aimed at helping municipalities cope with this massive problem.

Infrastructure Deficit – "the difference between infrastructure investment and needs."

McGill University conducted a subsequent cross-Canada survey of the municipal infrastructure condition *("Canadian Municipal Infrastructure Survey", December 1995).* This was closely followed by an update of the FCM report, prepared by McGill University *(FCM/McGill, "Report on the State of Municipal Infrastructure in Canada", January 1996)* which then estimated Canada's infrastructure deficit at $44 billion — and this just to improve the nation's infrastructure to an acceptable condition.

Part of the increase over the 1985 estimate was due to broadening the definition of municipal infrastructure to include municipal buildings, solid waste facilities, parking lots and structures, and electrical power distribution facilities. Notwithstanding this broadened definition, ***it is clear that the infrastructure deficit is a growing problem in this country.***

The City of Winnipeg undertook a limited analysis of the state of infrastructure in the *Report on Infrastructure 1994.* It was presented to the Works and Operations Standing Committee in October 1994. This report reviewed the state of the City's bridges, streets, alleys, sidewalks, and water and sewer mains, and determined that these represent a cumulative public investment of approximately $6.5 billion. By the year 2000, the report suggested this infrastructure may require approximately $525 million (1994 dollars) in maintenance and renewal works. By including the City's parking structures, buildings, swimming pools, solid waste and electric utility components, our total infrastructure maintenance and renewal works backlog easily exceeds $750 million.

A recent Canadian Union of Public Employees (CUPE) report stated *"The City's ever increasing infrastructure deficit is something that needs to be attended to. It is perhaps of greater long term consequence to the citizens we serve than our current finance related challenges." (CUPE, "Report to Council on Reshaping Our Civic Government", February 1997)*

It is widely accepted that the federal, provincial and municipal governments across Canada are faced with challenging financial circumstances. However, given the importance of infrastructure to our social and economic well-being, such investments are cost effective. This logic was embraced by the Federal Government, resulting in the $6 billion Canada Infrastructure Works Program (CIWP) approved in 1994. The CIWP was extended to cover a five-year period in the 1995 Federal Budget. In January 1997, a $425 million additional allocation to the program was announced to further assist job creation while focusing on infrastructure rehabilitation.

"... if anything, the CIWP (Canada Infrastructure Works Program) exposed the volume of infrastructure work which remains unfinished."

The continuing deterioration of our infrastructure and the escalating costs of rehabilitation require immediate policy and programming attention. Sustainable infrastructure programs will only occur if they are based on sound policy and fiscally responsible principles.

Infrastructure spending must be seen as an investment and not a cost. The investment must be strategic in nature, balanced in approach, and based on sound cost/benefit and life cycle analyses.

Council's Commitment to Infrastructure

Winnipeg City Council has long recognized the need for a strategic infrastructure reinvestment policy, and has articulated this commitment in a variety of public documents. Three major policy documents that demonstrate this commitment include:

- *Plan Winnipeg...Toward 2010*
- *Financial Management Plan — 10 Goals for a Stronger Financial Future*
- *Priorities for Winnipeg — Building Toward the 21st Century.*

• *Plan Winnipeg...Toward 2010*

It is fundamentally important that any decisions on municipal infrastructure be made within the context of an adopted policy by City Council. As with everything the City of Winnipeg does, the backdrop for policy making can be found in *Plan Winnipeg... Toward 2010 (City of Winnipeg Planning Department, 1993)*. Following extensive community consultation, *Plan Winnipeg* was approved by the Province of Manitoba and adopted by City Council on June 23, 1993.

Plan Winnipeg devotes an entire chapter to Urban Development Management, including infrastructure. It states:

> ***Our regional services and facilities represent a major investment of public funds. It is important that this investment be protected. The overall cost of orderly maintenance and reconstruction programs is less than deferral, which eventually requires expensive catch-up work.***

On the issue of maintenance of infrastructure, *Plan Winnipeg Policy 5C-01— Maintain Existing Infrastructure* — states:

> ***The City shall maintain the existing capacity of regional street, bridge, and public transit systems as its highest priority item for expenditure of funds when developing the yearly and five-year transportation capital programs.***

And finally, *Plan Winnipeg Policy 5C-36 — Provide Infrastructure Maintenance and Renewal* — states:

> ***The City shall endeavour to provide basic maintenance and renewal of its infrastructure of pavements, sewers and watermains.***

"It would cost every man, woman and child in Canada about $1500 each to upgrade infrastructure to an acceptable level."

- ***Financial Management Plan — 10 Goals for a Stronger Financial Future***

Plan Winnipeg called for the adoption of a financial management plan, by stating:

> ***The City shall prepare, implement and periodically review a financial management strategy that addresses alternative revenue sources and provides solutions for reducing property tax-supported debt.***

In response to this commitment, the *Financial Management Plan — 10 Goals for a Stronger Financial Future (City of Winnipeg, 1995)* was adopted by Council on July 12, 1995. The plan sets out Council's top 10 financial goals along with strategies designed to ensure performance measurement. These are designed to:

> ***... help the City balance its spending priorities with its available resources so that it can meet its obligations while improving Winnipeg's economic position.***

The *Financial Management Plan* links infrastructure renewal to economic development, global competitiveness and future prosperity — in short, to quality of life. Accordingly, the fifth goal — *Renew Infrastructure* — states:

> ***The City will develop a detailed list of total infrastructure liabilities with priorized plans to repair them and identified funding sources during the next term of Council.***

An outcome of the *Financial Management Plan* is this SIRP Task Force report. A future outcome must be Council's consideration and, hopefully, adoption of the recommendations in this report.

Decisions on municipal infrastructure must be made within the context of an adopted civic policy.

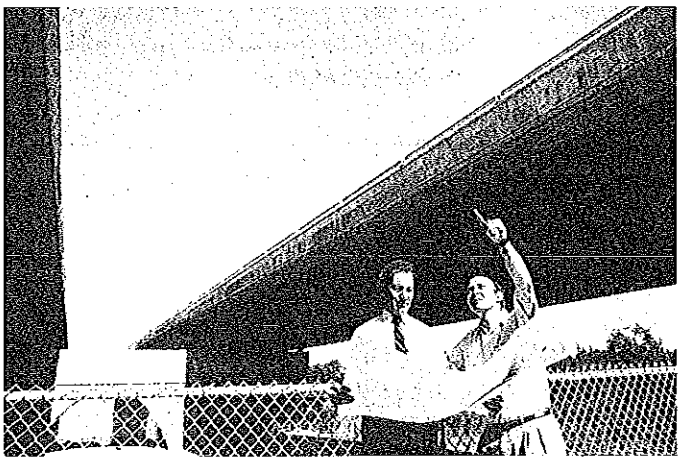
- ***Priorities for Winnipeg — Building Toward the 21st Century***

Council adopted *Priorities for Winnipeg — Building Toward the 21st Century (City of Winnipeg, 1996)* on June 19, 1996, premised on the principle enunciated in *Plan Winnipeg* that ***"there must be a commitment to policy and direction with no room for ambiguity".***

In *Priorities for Winnipeg,* Council set out five broad priority areas for the current term of Council. One of these is *"Managing our Investment in Infrastructure"* which targets five specific areas for attention:

- ***developing a residential streets renewal program***
- ***investing strategically in new infrastructure***
- ***re-investing in hydro and water quality***
- ***extending the life of the aqueduct***
- ***committing to long-range planning.***

Clearly in all its major policy documents, Council publicly recognizes the importance of infrastructure. It must now address this challenge with a bold commitment to policy and action.



Existing Infrastructure Condition

The figures used in this section of the report were provided and verified by Public Works, Water and Waste, and other civic departments of the City of Winnipeg, as required. The figures are estimates and include funding from several sources, including but not limited to: City of Winnipeg Capital Program and Current Operating Budgets, Provincial Urban Capital Project Allocation (UCPA) and Canada/Manitoba Infrastructure Works Program (C/MIWP). These figures do not include amounts from the Manitoba/Winnipeg Community Revitalization Program, developer agreements or local improvements. Every attempt has been made to ensure that these figures are as current and accurate as possible.

This Task Force report attempts to identify the magnitude of the infrastructure deficit challenge facing Winnipeg by documenting its current condition and outlining future reinvestment needs.

Understanding the following definitions is an important prerequisite to understanding our infrastructure condition:

Replacement Value
Indicates the gross replacement value of an infrastructure asset.

Historical Investment (Historical)
Unless otherwise noted, this is an annual average of infrastructure renewal investments made over the last 10 years, based on capital budgets.

Required Annual Investment (Required)
An estimate of the long-term annual average capital required to preserve existing infrastructure. It does not account for the current age or condition of the infrastructure, which may increase or decrease the current need, nor does it account for the day to day maintenance required to keep the system functioning.

Average Annual Investment Budget (Budgeted)
This is taken from the capital budget and five-year budgets. It represents an average of the budgeted investments proposed for the next six years.

Annual Investment Deficit
The difference between the required annual investment and either the historical or budgeted amount.

"... the (Canadian) infrastructure deficit has two elements — the absence of adequate funding and policy."

This section of the report illustrates historical, required annual, average annual budgeted investments, annual investment deficits, and the financing methods employed for each category of infrastructure.

Structures: Bridges, Underpasses & Culverts

Structures consist of waterway crossings, traffic and rail underpasses, and major culverts. There are approximately 196 such structures in our system. Collectively, they represent a replacement value of $987 million. The historic, required and budgeted levels of annual investment, as identified in the 1998 capital budget and five-year forecast, are:

Funding	Total
• Historical	$11.3 million
• Required	$19.7 million
• Budgeted	$13.7 million

With the exception of Provincial Urban Capital Projects Allocation (UCPA) funding, and the 30-year lease-back partnership agreement on the recently built Charleswood Bridge Project, all City funding in this category is by debenture debt financing.

The annual investment deficit in structures is $6.0 million. Deferring major rehabilitation impacts significantly on maintenance costs and results in higher capital improvement costs.

Structures in Fair to Poor Condition

Major Structures	Minor Structures
37%	52%

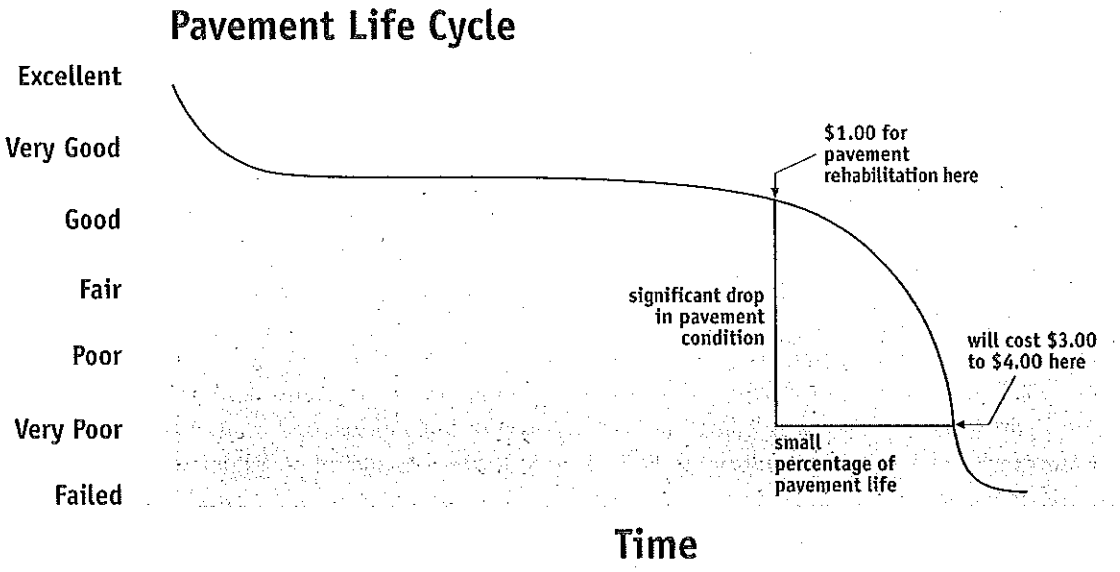
Major structures include waterway crossings and railway underpasses for vehicular traffic. Examples include the Jubilee Underpass and the Charleswood Bridge. Minor Structures include pedestrian waterway crossings such as the Assiniboine Park Footbridge, and major culverts such as the Omand's Creek crossings at St. Matthew's Avenue, Ellice Avenue and Sargent Avenue.

There are a number of major structures in poor condition, such as the Provencher Bridge and the Disraeli Bridge and Overpass. These represent a significant financial liability to the City within the next 10 years as major investments for rehabilitation will be required in this time frame.

Pavements: Streets, Lanes, Sidewalks

• Pavement Condition Rating & Management

Through timely use of overlays and concrete repairs, the City can reduce the rate of pavement replacement (as well as deferring the requirement for replacement). The diagram below illustrates the consequences of poor maintenance and rehabilitation timing. If such work is performed during the early stages of deterioration, before a sharp decline in pavement condition, a great deal of the cost of renewal can be deferred.



The consequences of poor maintenance and rehabilitation timing

In addition, the current operating budget for street maintenance provides for maintenance of both paved and unpaved streets, associated ditches, culverts, back lanes, sidewalks and railway crossings. Maintenance activities include both planned, rehabilitative work as well as reactive, or safety maintenance activities.

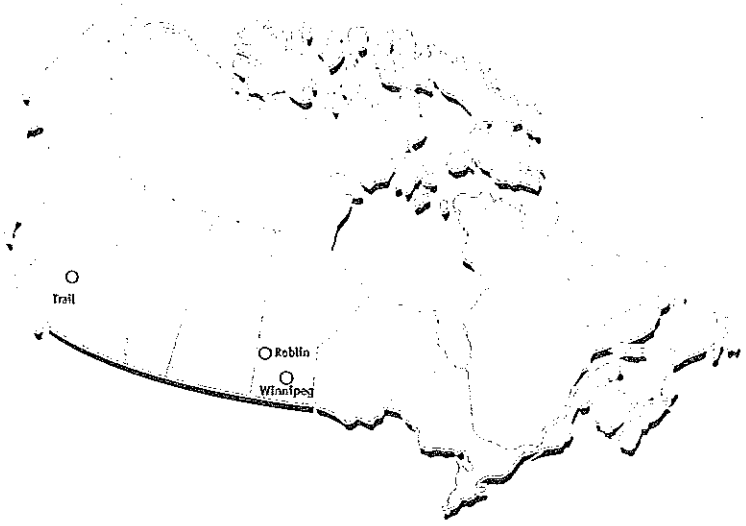
Good maintenance practices, at the optimal location and time, slow the deterioration rate of the pavement. Unfortunately, accelerated deterioration of the street system as a whole forces an increase in reactive maintenance measures. For example, the declining condition of the residential street system over the past three years corresponds to an increase in pothole patching expenditures of approximately 20 per cent over the same period of time.

The Public Works Department conducts annual surface distress surveys of both the City's regional and residential street systems. Through the use of a Pavement Management System (PMS), the calculated Pavement Condition Index (PCI) classifies each paved street section into the various levels of pavement condition: Excellent, Very Good, Good, Fair, Poor, Very Poor, and Failed.

Due to restricted resources, the pavement ratings have not been kept current. However, the data presented herein will give the reader a high level overview of the problem.

Regional Streets

Winnipeg's regional street system is vital to the movement of traffic and goods throughout the city. It is estimated the regional system carries about 80 per cent of the entire vehicle kilometres of travel for the city *(Public Works Department)*. The regional network of approximately 1720 lane kilometres (Winnipeg to Trail, B.C.) has a replacement value of about $1 billion.



Deterioration of the regional network has been kept to a minimum only because of reactive maintenance and renewal measures. Between 1994 and 1997, the inventory of regional streets in poor to failed condition increased from about 360 lane kilometres to about 380 lane kilometres (Winnipeg to Roblin, Manitoba) or 20 per cent of the entire regional network.

The historical, required and budgeted levels of regional street renewal investment, as identified in the 1998 capital budget and five-year forecast, are:

Funding	Total
• Historical	$9.3 million/year
• Required	$25.0 million/year
• Budgeted	$14.8 million/year

With the exception of the Provincial UCPA and the Canada/Manitoba Infrastructure Works Program (C/MIWP), all City of Winnipeg funding for regional streets, including the City portion of the above programs, is by debenture debt.

The annual investment deficit for regional streets has historically been about $15.7 million. With the increase identified in future budgets, the annual investment deficit amounts to $10.2 million/year.

Residential Streets

The residential street system carries about 20 per cent of the entire vehicle kilometres of travel in Winnipeg, and consists of 75 per cent of the lane kilometres of street pavement. It has a replacement value of approximately $2.6 billion. The residential street network consists of about 4350 paved lane kilometres (Winnipeg to St. John's, Newfoundland). There are an additional 680 lane kilometres of unpaved roadways (Winnipeg to Thunder Bay).

Beyond 1999, no investment in Winnipeg's residential street system is budgeted.

From 1994 to 1997, residential streets in poor to failed condition increased by 18 per cent — from 1360 to 1610 lane kilometres. Clearly, budget reductions in street maintenance and renewal programs contributed to residential street deterioration. Currently, the 1610 lane kilometres of poor to failed residential streets (Winnipeg to Sudbury) make up over 30 per cent of the entire residential street system.

Although the residential street inventory exceeds (by number of lane kilometres) that of regional streets by a margin in excess of three to one, the focus of street renewal dollars has been on regional streets because of the comparatively higher volume of traffic they carry.

The historical, required and budgeted levels of residential streets investment, as identified in the 1998 capital budget and five-year forecast, are:

Funding	Total
• Historical	$9.0 million/year (up to and including 1993 only)*
• Required	$30.0 million/year
• Budgeted	$2.5 (1998 capital budget)**

** From 1994 to 1997, no City capital budget funding was dedicated to a residential street renewal program. However, approximately $35 million worth of renewal work was achieved on residential streets through the Canada/Manitoba Infrastructure Works program from 1994 through 1998. The City contributed approximately one third of this amount through a supplemental capital works program.*

*** The 1998 residential street renewal program comprises a $5 million contribution from the Province of Manitoba and $5 million from the City's Capital Program. There is, as yet, no commitment by the City to residential street renewal funding beyond 1999.*

The City portion of funding for residential street renewal has to date been by debenture debt.

Historically, the City's annual investment deficit for residential street pavements has been $21 million ($30 million/year required less $9.0 million/year historical investment). With a $10 million investment in 1998, only 33 per cent of the required annual investment for residential streets will be met. With only $5 million projected for 1999, that percentage drops to approximately 16 per cent of the required investment. Beyond that time, no investment in the residential street system is budgeted.

By averaging the projected $15 million over the next six years, only $2.5 million per year will be invested — resulting in an average annual investment deficit of $27.5 million. At this rate, only eight per cent of the required investment in residential streets will be realized each year.

Back Lanes

Back lane pavements are an extremely important portion of the street network in the City of Winnipeg. They provide property access to residences, delivery access for businesses without impeding traffic flow on the front streets, and they facilitate refuse pickup in many areas. The City has approximately 880 lane kilometres of back lanes (Winnipeg to Flin Flon). These pavements have a replacement value of approximately $373 million.

Winnipeg currently has no program in place to assess the condition of back lanes. Primarily located in older neighbourhoods, it is believed that back lanes are generally in worse condition than residential streets. Both were built at the same time, however since construction, there has been extremely limited lane renewal work and lower levels of maintenance. Between 1994 and 1997, the C/MIWP injected about $3.3 million of badly needed renewal funds into Winnipeg's back lanes. The 1998 five-year capital forecast includes a back lane program of $2.2 million, beginning in 2000 and continuing at $2.7 million annually in subsequent years.

The historical, required and budgeted levels of lane investment, as identified in the 1998 capital budget and five-year forecast, are:

Funding	Total
• Historical	$0.0 million/year (except for C/MIWP funds, as noted)
• Required	$5.0 million/year
• Budgeted	$1.8 million/year

The City portion of funding for back lane renewal to date has been by debenture debt.

Based upon the above, the City's lane pavement investment deficit has in the past been $5 million annually, and this will continue until 2000. The proposed back lane program of about $2.7 million per year beginning in 2001 will still leave an annual deficit of $2.3 million.

Sidewalks

Sidewalks are the one aspect of Winnipeg's pavement network which serve the entire population. Sidewalks provide personal access to residential and commercial properties, as well as safety for pedestrians and aesthetics to urban neighbourhoods. Winnipeg has about 3100 kilometres of sidewalks (Winnipeg to Prince Rupert, B.C.). The replacement value of all sidewalks is approximately $163 million.

Sidewalk renewals are achieved in two ways: in conjunction with street renewal works (on both regional and local street projects); and as stand-alone projects (along both regional and local streets). It follows then that as the local and regional street renewal funds are increased, there is reduced stress on the sidewalk renewal program.

The historical, required and budgeted levels of dedicated sidewalk renewal investment, as identified in the 1998 capital budget and five-year forecast, are:

Funding	Total
• Historical	$0.6 million/year*
• Required	$2.0 million/year
• Budgeted	$0.9 million/year

** This does not include the approximately $1.9 million allocated to sidewalks (both regional and residential) through the C/MIWP from 1994 to 1997.*

The City of Winnipeg sidewalk renewal program, including the City's portion of funding for the C/MIWP, is financed by debenture debt.

At a budgeted level of $0.9 million, the annual investment deficit for City sidewalks is $1.1 million.

Underground: Watermain and Sewer

Watermain Infrastructure

Winnipeg's total watermain inventory consists of 2380 kilometres (Winnipeg to Montreal). The mains have a replacement value of approximately $1 billion. To its credit, the City has a well-established system for funding the replacement of its watermain system by means of a frontage levy. This methodology of charging a fee per foot of property frontage annually raises cash which is dedicated to watermain renewals. Since the program raises cash, no debt (or debt payments) are incurred.

As the number of leaks detected annually is the relative measure of the overall condition of the watermain system, the benefits of this frontage levy extend even further. Since 1985, the general trend has been to lower numbers of watermain breaks *(City of Winnipeg, "Better Streets for a Better City", 1993).*

The success of this type of dedicated funding is also echoed by the FCM in its conclusions and recommendations:

> *Where there is user pay funding to support infrastructure development and maintenance, facilities seem to be in better condition than the infrastructure supported through general revenue funding. (FCM/McGill "Report on the State of Municipal Infrastructure in Canada", January 1996.)*

"A dedicated program of timely watermain renewals has reduced watermain repair costs."

Since 1991, program investments of $11 million per year for watermain rehabilitation allowed the City to replace approximately one per cent of the system annually. In 1998, recognizing that in the short-term, the watermain system was in superior condition to the sewer system, the total water and sewer frontage levies were rebalanced to allow more spending on sewer renewals and less on watermain renewals.

The historical, required and budgeted levels of watermain investment, as identified in the 1998 capital budget and five-year forecast, are:

Funding	Total
• Historical	$8.4 million/year
• Required	$10.8 million/year
• Budgeted	$6.3 million/year

- **Watermain Infrastructure Maintenance**

The Water and Waste Department's current budget for watermain maintenance in 1997 was approximately $5.2 million. These funds are used for repair of watermain breaks and distribution system maintenance. In addition, the department spends about $7.8 million on service pipe, valve and hydrant maintenance. These programs are for preventative maintenance, as well as replacement of elements which have reached the end of their useful life. Approximately $1.3 million is spent on meter replacement and repair, as meters reach the end of their useful life and in response to customer issues.

The City estimates that with cathodic protection programs, the level of reinvestment in watermains projected in the 1998 - 2003 capital budgets is reasonably adequate.

Sewer Infrastructure

The City's sewer inventory consists of 3391 kilometres, including 1216 kilometres of wastewater sewer pipe, 1056 kilometres of combined sewer pipe, and 1119 kilometres of land drainage sewer pipe. If laid end to end, the City's sewer system would stretch from Winnipeg to Moncton, New Brunswick. The overall condition of our sewer system is almost the worst in Canada, second only to Montreal, according to the *Report on Infrastructure (City of Winnipeg, 1994).*

The sewer system replacement value is estimated at $2.9 billion. As with watermains, the funding for Winnipeg sewer renewals comes from a frontage levy of $0.85 (1997 rate) per front foot. This rate is to increase annually as part of a planned program to $1.90 per front foot by 2001.

The historical, required and budgeted levels of sewer infrastructure investment, as identified in the 1998 capital budget and five-year forecast, are:

Funding	Total
• Historical	$2.4 million/year
• Required	$29.0 million/year
• Budgeted	$17.5 million/year

This cash program will invest $17.5 million per year over the next six years. This level of investment permits less than one per cent replacement of the system annually. Conservative estimates suggest the level of reinvestment in the sewer system requires $29 million per year.

The annual investment deficit in sewers is approximately $11.5 million over budgeted levels.

• Sewer Infrastructure Maintenance

Approximately $4.3 million is invested annually in sewer maintenance, including cleaning, TV inspection and repair for wastewater sewers. A further $1.4 million is invested in similar activities for land drainage sewers.

Other Municipal Infrastructure

The City has many other types of infrastructure aside from those already outlined. The total value of the City's major infrastructure elements is estimated at $14.4 billion. In addition to the pavements and piping, the City owns hydro facilities, buildings, parkades, bus fleets, sewage treatment plants, swimming pools, arenas and other types of infrastructure. Each of these elements have special reinvestment needs that are driven by different factors.

The total value of Winnipeg's infrastructure is estimated to be $14.4 billion.

The City of Winnipeg applies monies toward the maintenance of existing infrastructure. However, given fiscal pressures, concerns about controlling expenditures, and expenditure reduction initiatives unreferenced against financial decision impacts, the reality is — that like capital budgets — maintenance budgets fall short of prudent asset management.

Rehabilitation investment strategies for the purpose of extending the useful design life of the City's infrastructure inventory are neither funded nor implemented. We can only assume that the absence of a maintenance policy framework against which to reference these financial decisions only adds to the problem.

In the following table, an attempt has been made to quantify needs and approximate expenditures to illustrate the current status of these major infrastructure types. The table reveals $202 million per year in required annual maintenance and renewal works. In reality, only about $120 million per year has been budgeted.

The City's efforts in maintaining these ongoing, day-to-day needs with such limited resources must be commended. However, the annual infrastructure investment deficit of almost $82 million over budgeted levels must first be recognized, then systematically and strategically addressed.

Deferred Maintenance & Renewal

As in many North American cities, the practice of deferring investment in maintenance and renewal of Winnipeg's infrastructure is evident. Deferring maintenance results in the eventual cost of repair being as much as three to five times higher — depending upon the specific asset — than if regular maintenance had been strategically undertaken.

Moreover, this contradicts a fundamental principle of sustainability. Each generation should pay for its share of use and enjoyment of intergenerational assets. Practicing deferred maintenance means we are passing on to our children and grandchildren the cost of our infrastructure use.

(in thousands of dollars)

Infrastructure Element	Replacement Value [2]	Required Annual Need	Average Annual Budgeted Expenditure[3]	Average Annual Investment Deficit	Present City Source of Funding	Expenditure Type
Bridges & Structures	$ 987	$19.7	$13.7	$6.0	Mill Rate[4]	Debt
Regional Streets	1000	25.0	14.8	10.2	Mill Rate[4]	Debt
Residential Streets	2600	30.0	2.5	27.5	Mill Rate	Debt
Back Lanes	373	5.0	1.8	3.2	Mill Rate	Debt
Sidewalks	163	2.0	0.9	1.1	Mill Rate	Debt
Watermains	1080	10.8	6.3	4.5	Frontage Levy	Cash
Shoal Lake Aqueduct	500	6.0	3.8	2.2	Surcharge	Cash
Other Waterworks & System Funding[5]	250	5.0	1.5	3.5	Water Rate	Debt
Sewers	2900	29.0	17.5	11.5	Frontage Levy	Cash
Sewage Interceptor/ Lift Stations	250	2.5	2.5	0.0	Sewer Rate/ Surcharge	Cash (Reserve) 34% Cash (Rate) 66%
Sewage Treatment Plants	600	6.0	7.5	(1.5)	Sewer Rate/ Surcharge	Cash (Reserve) 47% Cash (Rate) 53%
Land Drainage Systems	1700	2.0	2.0 [3]	0.0	Mill Rate	Debt
Power Plants & Dams[6]	550	7.3	11.5	(4.2)	Electricity Rate/ Retained Earnings	Debt 81% Cash 19%
Transmission Lines	90	1.2	5.9	(4.7)	Electricity Rate/ Retained Earnings	Debt 81% Cash 19%
Substations & Distribution Systems	560	16.0	9.4	6.6	Electricity Rate/ Retained Earnings	Debt 81% Cash 19%
Civic Buildings	229	9.5	4.1	5.4	Mill Rate	Debt
Parkades	58	1.7	0.2	1.5	Mill Rate	Debt
Parks & Recreation[7]	246	9.8	1.2 [3]	8.6	Mill Rate	Debt
Transit Buses	180	10.0	10.9	(0.9)	Transit Rate[4]	Debt 11% Cash 89%
Transit Plant & Equipment	85	3.2	2.0	1.2	Transit Rate	Debt
TOTAL (millions)	**$14,401**	**$201.7**	**$120.0**	**$81.7**		

[1] All numbers supplied and verified by respective civic departments.
[2] Replacement value in 1997 dollars.
[3] From 1998 capital budget and five-year (1998 - 2003) forecast — except Land Drainage Systems and Parks and Recreation, which are from the 1997 capital budget and five-year (1997 - 2002) forecast.
[4] These activities receive Provincial UCPA funding.
[5] Does not include water treatment plant cost of $204 million which will be 67% cash financed via a surcharge.
[6] Does not include reserve funds being accumulated for Power Plant Refurbishment.
[7] Does not include community center unheated spaces, hockey pens, or lighting systems, the zoo, conservatory, and hard and soft landscaping.

Infrastructure Requirements: Strategic Investments

Historical Investments

The City has made significant investments in infrastructure. In the past decade alone, over $380 million has been invested. The projects below are illustrative of some of the infrastructure investments made. Most included significant capital contributions from the Province of Manitoba:

McPhillips/Leila North	$ 6 million	1989
Chief Peguis Trail (Kildonan Bridge)	$ 34 million	1990
Bishop Grandin Boulevard Extension	$ 36 million	1990
North End Sludge Dewatering Facility	$ 20 million	1991
Regent Avenue Widening	$ 13 million	1992
Water Pollution Control Centres	$ 95 million	1994
Graham Avenue Transit Mall	$ 6 million	1995
Charleswood Bridge	$ 30 million	1995
Pembina Highway Dualling	$ 20 million	1997
Bishop Grandin / Kenaston Connection	$ 8 million	1998
Brookside Boulevard	$ 10 million	1998
Main Street / Norwood Bridges	$102 million	completion in 1999
Total	**$380 million**	

Future Requirements

Some new infrastructure projects that may have to be considered in the next 10 - 20 years are classified in the following categories:

A) Meeting New Federal and/or Provincial Regulations

- wastewater ammonia removal $100 million
- new water treatment plant $200 million
- combined sewer overflow mitigation $400 million

B) Accommodating Increased Demand (Growth) in the City

- southwest transit corridor $ 75 million
- hydro plant & transmission line upgrade $275 million

C) Facilitating Economic Opportunities that Generate New Wealth

- Winnport infrastructure $110 million

D) Flood Protection

• flood control infrastructure	$200	million
• river bank stabilization (public property)	$ 40	million

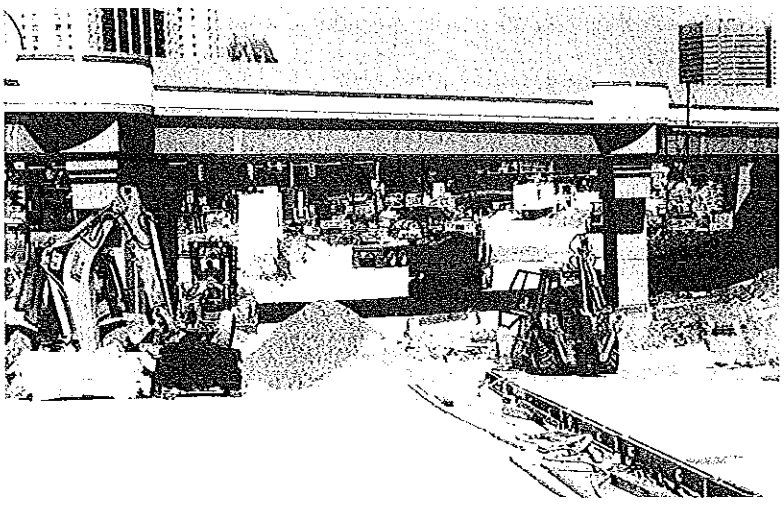
Total Estimated New Infrastructure Requirements

The intent of the foregoing is to demonstrate that the demand for infrastructure dollars is not limited to aging systems. The listing is not meant to be exhaustive, but rather is illustrative of the type of demands that exist. While governments may find private partners to share this burden, nonetheless, these elements must be factored into future planning.

Total additional, estimated	**$1.4**	**billion**

A dedicated revenue stream (i.e. surcharge) has been established to build reserves for the water treatment plant. As well, Winnipeg Hydro has begun to set aside a portion of its profits to address power plant and transmission line upgrade requirements. Although the amounts of revenue being set aside will fund only a part of what is actually required, this is a move in a positive direction.

In addition, some of these projects may be prime candidates for public/private partnership consideration because they may generate sufficient revenue to provide the required financing to be self-sustaining.



Why an Infrastructure Deficit?

The infrastructure deficit facing the City of Winnipeg is a result of a number of significant contributing factors, some of which are unique while others exist widely. In order to design a strategy to overcome a problem, it is important to clearly understand the root cause of the problem. The following section addresses this issue.

Because Winnipeg's infrastructure is aging, it is less efficient and more expensive to maintain.

Old Infrastructure

Compared to other western Canadian cities, Winnipeg is old. Our major growth period began long ago and slow, continual growth patterns followed. Much of our infrastructure was built in Winnipeg's boom period which began in the late 1800s and carried through until the 1930s. The result is that our infrastructure is now quite old and very expensive to maintain or replace. Examples include: Winnipeg's sewer and watermain system, some of which still dates to the 1890s; the Winnipeg aqueduct, which opened in 1919; hydro generation facilities which date back to the 1920s and 1930s; and some major structures like the Arlington (1912), Louise (1911) and Redwood (1908) bridges, and the McPhillips (1910) and Main Street (1904) underpasses.

Another period of infrastructure growth was in the 1950s and 1960s to sustain the post-war baby boom. Federal programs encouraged home ownership and put pressure on municipalities to develop housing subdivisions. This resulted in the need to invest in infrastructure facilities.

During the gradual aging process, the City has not adequately maintained or strategically replaced this infrastructure, causing even more frequent breakdowns and higher maintenance and replacement costs. The bottom line — our infrastructure is less efficient and more expensive to maintain.

Severe Climate and Soil Conditions

In addition to the natural aging of our infrastructure, it is also exposed to a severe climate. The freeze-thaw cycle, the necessary use of abrasive and corrosive ice treatments, as well as extreme temperature fluctuations all contribute to an accelerated aging process.

The highly expansive nature of much of the local soil bed results in structural fatiguing of the underground and surface infrastructure (eg. water, sewer and pavements) as temperatures and moisture content naturally fluctuate. Also, Winnipeg soils are aggressively corrosive, chemically attacking many types of construction materials and underground fixtures.

Inadequate Maintenance

Proper maintenance practices extend the life cycle of any structure. Conversely, neglecting needed maintenance shortens the life cycle and earlier, more costly replacement is required. For example, the cost to rehabilitate an existing residential street pavement is about $65 per square metre compared to $180 per square metre for a pavement reconstruction. Work such as a thin bituminous overlay can significantly extend the life of existing pavements for approximately 10 per cent of the reconstruction costs. This must be balanced with a street reconstruction program.

The problem is magnified as funds that are not available for basic maintenance are even more difficult to obtain for the escalated costs of major repair or replacement. Over time, this situation spirals into a monumental problem.

Inadequate Standards

As part of the Canada Infrastructure Works Program (CIWP), a technical literature review of standards and benchmarks was conducted by researchers at Queen's University *(Queen's, "Canada Infrastructure Works Program — Program Review and Evaluation: A Technical Literature Review", 1996)*. The purpose of the study was to determine if standard protocols are used to assess infrastructure needs and to tie the results of these assessments to the allocation of resources needed to complete the necessary work. They found that *"standards and benchmarks are often inadequate and sometimes inappropriate"*. Because of this, infrastructure rehabilitation and replacement decisions become judgmental rather than based on scientific information.

Further, the lack of clearly defined protocols on which to base infrastructure investment decisions, coupled with gross underfunding, are factors leading to the deterioration of systems elsewhere. We believe that the same situation exists in this jurisdiction.

Non-Uniform Standards

Winnipeg's infrastructure deficit evolved over decades, and much of today's replacement and maintenance concerns stem from the fact that the City once operated as 12 separate cities, towns and villages. In 1971, these 12 communities amalgamated into one City. Prior to this time, no uniform standards existed, and the infrastructure needs of each community were addressed in isolation from one another. In some cases, infrastructure was originally built for a non-urban environment. Since amalgamation, maintenance of this non-uniform infrastructure and replacement to a common, acceptable standard has resulted in significant expense.

Changing Growth Patterns

Changing lifestyles in North America have centred on the development of suburban areas which require new roadways, sewer systems, lighting systems, additional transit routes, additional police services, etc. The local servicing needs and local regional upgrading in Winnipeg are covered by development agreement charges. However, regional services like expanded wastewater facilities, water reservoirs, feedermains and interceptor sewers, land drainage trunks, regional limited access throughways, and the like, remain to be funded by system users at large.

Exurban Development

Development beyond the City's boundaries has also had an impact. The rural municipalities outside Winnipeg have grown significantly in the last 10 - 15 years. These municipalities are building new infrastructure (eg. roads, community centres) and are asking for the extension of urban services (eg. water and sewer) to meet their local needs. This type of development competes for provincial funding in the Capital Region. The City also loses essential tax revenue from new residential development that is occurring outside its boundaries.

A recent presentation on the *"Capital Region ... the issue of services" (City of Winnipeg, January 1998)* highlights this assessment base problem, particularly the *"erosion of tax base at the upper end of the assessed values."* Demographics show predominant growth of double income families in the Capital Region, while the opposite is true in the City.

Illustrative of the above, demographic trends show the Capital Region population from 1991 to 1996 increased by 6,178 on a base of 81,349, while the City of Winnipeg increased by only 3,262 on a base of 615,215 during the same period. Further, socio-demographics indicate that 21 per cent of those living in the City are below the poverty line, while the Capital Region has only five per cent at this level *(City of Winnipeg, "Capital Region ... the issue of services", January 1998).*

Financial Considerations

Past decisions to pay for infrastructure placed greater reliance on the use of debt as opposed to cash, user fees or special levies. This increased property taxes. Significant steps are being taken to correct this now, but it will take a number of years to reduce our dependency on debt and its resultant effect on the property tax system. Meanwhile, further financial burdens cannot easily be placed on property owners to pay for new infrastructure.

Provincial, City and other local governments are encouraged to work together to facilitate future new and diversified revenue opportunities directed to infrastructure renewal. Potential opportunities include a gasoline tax, automobile registration tax, frontage levies, and others.

Another financial difficulty is caused by the ad valorem tax system itself. The tie between assessed property values and service delivery is weak at best, and results in all sorts of inequitable cross subsidizations. These issues have real effects in terms of raising appropriate revenue streams for infrastructure rehabilitation and renewal, but are beyond the scope of this report. Council has appointed a Committee on Tax Reform to deal with this issue.

Shift to Heavier Truck Loads

Truck loading capacity increased dramatically starting in the late 1960s. These heavier weights added stress to roads, bridges and structures that were never designed to accommodate such loads. Changing regulations in the transportation industry have caused this problem to further escalate.

Cash Accounting Methods

Another factor that has contributed greatly to the deterioration of the infrastructure relates to the government's method of accounting. *Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector (Gaebler and Osborne, 1992)* spells out how our cash accounting system of government bookkeeping *"gives the long term short shrift."* They state:

> *Business and governments practice very different forms of accounting. Businesses use 'accrual accounting' in which any future obligation incurred (a debt, a commitment to pay a pension) is counted as an expense. Governments normally use cash accounting, in which expenses are not counted until money is actually paid (or a slightly different version called modified accrual accounting). Hence governments can rack up enormous future obligations — far beyond their capacity to pay — and their accounts will look perfectly balanced. Government accounting, in other words, is future-blind. (p.243)*

Further they argue:

> *Physical assets are investments: when a government builds a highway or dam, it is creating something of value, almost like a savings account. As that dam ages and wears out, its value declines — because without expensive repair, it will ultimately give way. This use is a form of spending: in business, it is called depreciation. But as Leonard points out, 'our accounting systems hardly notice'. Since they were designed to track cash transactions, they don't record the declining value of a physical asset.*
>
> *At all levels of government, accounting records almost entirely ignore what assets are owned, their state of repair, and their value. These systems therefore imply that it costs nothing to use existing assets. Indeed, they suggest the opposite: by cataloguing the costs of maintenance as a current expense, they make it seem cheaper to use up assets than to keep them in good repair. (p.243)*

We chose to use a lengthy quote from *Reinventing Government* to describe this issue as it states the case well. The point made here is that government balance sheets do not reflect the true cost of deferring infrastructure rehabilitation and renewal.

Infrastructure investment decisions should be strategic in nature and accompanied by appropriate cost/benefit analysis.

Insufficient Analysis

In the past, important decisions on the reduction of rehabilitation or maintenance funding levels have been made without the benefit of detailed cost/benefit analyses. Often these decisions are made based on budget pressures, and invariably are viewed as temporary measures. Decisions to cut maintenance expenditures create a new lower base budget for carrying out these programs. When the next round of budget discussions take place, the already insufficient base budget is viewed as the starting point for the deliberations. The result is a downward spiral.

Similarly, important public policy decisions on the provision of new infrastructure elements are infrequently accompanied by detailed analyses of financial impacts into the future. Given its critical importance, we must be more fiscally practical in balancing our need for infrastructure maintenance and renewal with the need to balance the budget.

Absence of Policy

The existence of an infrastructure deficit — while attributable to all and more of the factors mentioned — also points to a problem common to all municipal governments, namely the absence of an infrastructure policy.

Major public investment decisions for service and delivery are generally tied to policy. Examples include social services, transit, police, fire, ambulance, and recreation. Nowhere in this mix does an infrastructure policy exist. The very existence of this Task Force and its report speaks to the need to establish one.

This observation is not intended to be a statement of criticism — but rather of fact — essentially applicable to all cities in Canada. Winnipeg has the opportunity and challenge to lead by example by adopting a comprehensive, strategic infrastructure reinvestment policy.

Inaction is Not an Option

There are other compelling reasons that tell us that inaction is not an option.

The question is not whether to fund an infrastructure program, but rather at what level and under what arrangements.

Liability Considerations

All governments have obligations to their citizens for matters under their control. The *City of Winnipeg Act* requires the City to maintain and repair streets. Further deterioration may expose the City to potential liability.

Demonstrating that the City is responsive to its statutory obligations by addressing infrastructure needs will help alleviate this concern. Policy decisions are required as positive "next steps" in this direction. *(Sokalski, "Who Plays the Fiddle While the Infrastructure Crumbles?", March 1997)*

Public Expectations

Winnipeggers have identified the condition of the City's infrastructure as one of their top five issues. The public expect civic government to make investing in infrastructure an effective budget priority. In recognition of this, Council has adopted policy positions on the importance of infrastructure and related financial issues. As well, economic development is among Council's highest priorities for Winnipeg, and a sound infrastructure is critical to attracting and retaining a viable business sector. In turn, the business sector expects Council to fulfill its promises of creating economic expansion opportunities.

General Observations

The City's infrastructure should not be left to deteriorate to the point where it no longer services the needs of Winnipeg. Allowing these systems to deteriorate impacts our urban image, our competitiveness, the environment and our economy.

Accordingly, the question is not whether to fund infrastructure programs, but rather at what level and under what arrangements. Therefore, since we recognize the problem and the urgent need to deal with it, our goal must be to find suitable, sustainable solutions that are consistent with Council's goals and public expectations.

When it comes to infrastructure reinvestment, we have concluded that there are three key issues:

1) we must invest more into infrastructure

2) we must make strategic investments with the dollars we do have

3) we must find ways to reduce the magnitude of the infrastructure deficit problem.

Addressing these issues will halt the trend toward further infrastructure decline. In doing so, there are many avenues and options to explore, and many opportunities to be created. A series of policy options has been developed and are presented in the next section.

Strategic Policy Options

Dealing with our infrastructure deficit is a major civic challenge. Winnipeg must in a practical fashion reduce the infrastructure deficit. Given our current economic climate, every infrastructure investment decision will be difficult to make. However, the maintenance of existing infrastructure and strategic provision of new systems must be Winnipeg's first order of business.

There must be a concerted effort to reduce the infrastructure deficit.

By adopting a comprehensive policy-based approach to infrastructure renewal, the City of Winnipeg can become a leader among Canadian municipalities and a model for other jurisdictions.

During the course of the SIRP Task Force's work, many respected Canadian authorities on infrastructure were reviewed. In addition, American studies were considered, including the 1994 U.S. Federal Infrastructure Investment Strategy *(High Performance Public Works, Report SR-16, November 1993)*. The conclusions of this study have been summarized in *"Sourcebook of Working Documents to Accompany 'High Performance Public Works', A New Federal Infrastructure Investment Strategy for America", September 1994.* Appropriate references are provided throughout this report and in the bibliography.

We believe that the policy options outlined herein are sound, and if adopted, will position Winnipeg well for the next millennium.

A.) Infrastructure Maintenance Policy Options

Clearly, a huge investment exists in the infrastructure that is already in place. Proper stewardship means that this investment must be protected and enhanced. This can happen by investing in maintenance.

Life Cycle Costing

The concept of analyzing future costs when comparing initial investment costs is called life cycle costing. Life cycle costing accounts for *"all costs incurred by the owner to buy, operate and maintain a system or equipment used for a specific task or set of tasks, over its period of ownership." (Zemansky, "Life-Cycle Cost Procurement", Costing Government Services: A Guide for Decision Making, 1989)*

In *"Life cycle costs — The true cost of infrastructure" (da Silva, November 1997)*, the author estimates that over the life of a system, 75 per cent of the system cost is for ongoing operation, maintenance and replacement of time-worn equipment, 23.5 per cent is for initial capital and 1.5 per cent is for engineering and design.

We believe that when considering a new project, or upgrading or retrofitting an existing system, a proper life cycle costing analysis should be completed. The Federal Government, in cooperation with the National Research Council, has developed a program for conducting life cycle costing in federal facilities *(Mirza, "Canada's Deteriorating Infrastructure", 1997)*. This program may be of use for City facilities and should be evaluated.

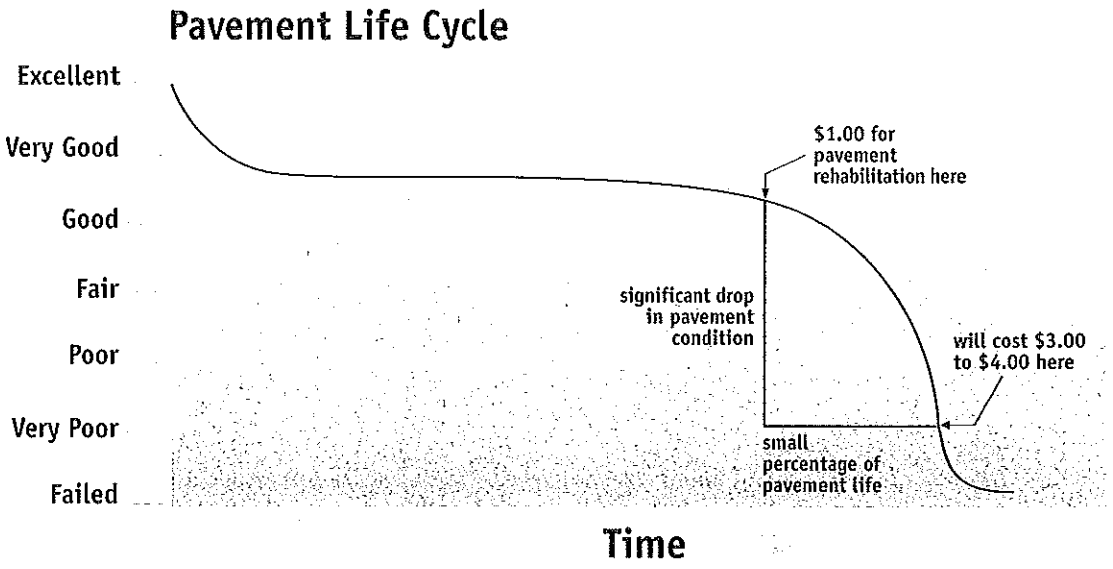
Policy Recommendation:

Life Cycle Costing

1. *That all capital programs for new or rehabilitated infrastructure be subjected to life cycle costing analysis to determine the most cost effective options for consideration.*

Minimize Deferred Maintenance

It is widely recognized that deferring maintenance results in higher long-term costs. For example, it costs significantly more to replace a failed road pavement than to rehabilitate and maintain a worn but structurally sound pavement. Relatively inexpensive asphalt overlays applied at the proper time in the pavement life cycle can easily add 10 to 15 years of life to a road surface.



The consequences of poor maintenance and rehabilitation timing

Deferred maintenance means *"that the eventual cost of the repair will be higher than if regular maintenance had been undertaken at appropriate points in the life cycle of the infrastructure. In addition, when maintenance is deferred, the life cycle of the infrastructure is decreased and complete reconstruction may be necessary at an earlier date." (Infrastructure Council of Manitoba, "National Infrastructure Policy (NIP): An Ongoing Commitment", January 1998)*

Maintenance programs should not be compromised for budgetary reasons, where possible, as the short-term savings result in significantly higher long-term costs. In addition, service to the public gradually worsens as the infrastructure element deteriorates over time. This results in damage, delays and inconvenience — all of which have costs associated with them that are rarely associated with infrastructure decay. Finally, deferring maintenance and incurring future costly liabilities is totally inconsistent with the sustainable infrastructure concept recommended in this report.

Deferring investments in maintenance results in higher long-term costs.

Policy Recommendation:

Minimize Deferred Maintenance

2. *That ideally, maintenance for existing infrastructure should only be deferred if the impact on the life expectancy and life cycle of the asset is documented to be minimal.*

Factor Maintenance into Initial Costs

We must recognize that **every part of the urban infrastructure fabric has an ongoing maintenance component.** When new or upgraded facilities are proposed, the incremental maintenance costs must be identified and built into budgets. Even projects as simple as streetscaping upgrades can result in significant new maintenance costs as a result of things such as non-standardized street lighting, fountains, planters and benches, etc., all of which require parts and service. In addition, there may be substantial incremental costs for annual maintenance operations such as snow clearing or street cleaning.

Policy Recommendation:

Factor Maintenance into Initial Costs

3. *That when new or upgraded facilities are proposed, they be accompanied by resulting incremental maintenance costs, linked into a parallel maintenance budget.*

Computerized Maintenance Management Systems (CMMS)

Preventative maintenance is much more cost-effective than reactive or breakdown maintenance. While initially more expensive, such a system produces impressive long-term benefits.

We need to develop better use of information and management systems. GIS (Geographical Information Systems) and CMMS (Computerized Maintenance Management Systems) would improve our management of infrastructure and help utilize the scarce available maintenance funding more effectively. The FCM recommends *"more reliance on geographic information systems for improved infrastructure management" (FCM/McGill, "Report on Municipal Infrastructure in Canada", 1985).*

Establish maintenance budgets parallel to capital budgets.

Policy Recommendation:

Computerized Maintenance Management Systems (CMMS)

4. *That civic department preventative maintenance programs be funded by Council to be information current, and supported by Computerized Maintenance Management Systems (CMMS).*

Management of Asset Data

The infrastructure deficit identified in this report is based in large part on the estimates available from the City of Winnipeg's *"Report on Infrastructure" (October 1994).* The average annual investment deficit values have been updated by departmental staff to reflect 1997 values.

Each time these surveys are conducted, great difficulty is encountered in obtaining data that is consistent from one department to another — and from one division to another.

We believe that there is a corporate role to be played in terms of strategically managing the City's infrastructure assets. Given Council's commitment to infrastructure as evidenced in major policy documents *(Plan Winnipeg...Toward 2010, Financial Management Plan, Priorities for Winnipeg),* and given the extent of the problem, its priority ought to be recognized at the most senior administrative level.

It is our view, therefore, that the Chief Administrative Officer (CAO) Secretariat should play an important coordinating role in this function and be properly resourced.

Policy Recommendation:

Management of Asset Data

5. *That the CAO Secretariat be assigned and resourced to coordinate the City's infrastructure asset data management.*

B.) New Technology Policy Options

The City's commitment to renew and upgrade infrastructure may result in benefits far beyond superior structures and a better quality of life. By embracing the concept of applying emerging, innovative, sustaining technologies and best practices, Winnipeg may also realize the economic opportunities associated with having such technology developed and utilized in our own backyard.

Reactive or breakdown maintenance is a costly and ineffective way to manage systems.

Intelligent Sensing for Innovative Structures (ISIS Canada) has a mandate to help develop Canadian civil engineering capabilities to a world leadership position through the application of advanced composite materials (ACMs) and integrated "intelligent" fibre optic sensing systems. ISIS Canada is based in Winnipeg at the University of Manitoba, Faculty of Engineering.

ISIS Canada technology provides the following benefits when applied to infrastructure:

- longer life cycle
- reduced maintenance costs
- superior strength
- enhanced durability
- resistance to corrosion
- increased job site productivity
- increased cost efficiencies
- expanded design options
- early warning system for structural failure
- substantial reduction of costly site inspections.

Using superior technology is a better long-term solution. It can dramatically increase the life cycle of structures and better meet the increased demands imposed upon them.

Advanced Techniques & Technologies

New products are being developed which will not only result in longer lasting, lower cost, more durable infrastructure, they will also provide economic opportunities for the communities in which the technology is developed and utilized.

Pioneered by ISIS Canada, the use of ACMs can result in significantly reduced capital and operating costs in facilities. These ultra-strong and non-corrosive materials used in place of reinforcing steel in structures are already being tested. In addition, applications of ACMs for hydro poles and the use of fibre-reinforced concrete and carbon fibre-reinforcement for upgrading substandard concrete structures offer cost savings and maintenance reduction opportunities.

"... conventional materials only feed the cycle of deterioration and costly repairs. The new technologies provid(e) an alternative..."

The coupling of ACMs and "intelligent" fibre optic sensing systems is leading edge technology that allows structures of all types to be remotely monitored and their performance measured. This capability supports superior maintenance, which will substantially enhance performance and longevity of infrastructure elements. The recently constructed Taylor Bridge in Headingley is a local example of this technology, which should be considered for other projects.

Policy Recommendation:

Advanced Techniques & Technologies

6. ***That the City encourage the application of "intelligent" technology, new methodologies and innovative products such as ACMs in infrastructure renewal, rehabilitation, construction or preventative maintenance programs.***

Improved Practices

A cooperative effort by the National Research Council (NRC), the Canadian Public Works Association (CPWA) and the FCM is presently underway that will hopefully see the development of a Technical Guide for Urban Infrastructure for Canada (*Félio et al.; "A Proposed Technical Guide for Infrastructure for Canada", 1994).*

In addition, a Committee of the Transportation Association of Canada (TAC) is developing a data base of best practices for maintenance and construction services. These will be best practice documents endorsed by private and public infrastructure practitioners and driven by functional requirements. They will provide decision-making tools leading to the use of best practice techniques.

"Innovations in Urban Infrastructure" (Baker and Lacasse, 1997) demonstrates that using conventional materials and methods to address old infrastructure problems will only cause the current cycle of deterioration to continue. The use of best practices in infrastructure renewal and rehabilitation makes good sense. For example, utility cuts in pavement can reduce its life cycle by as much as 60 per cent. Applying new trenchless technology methods can reduce the need for such cuts. Developing even better procedures and materials for something as simple as pavement crack sealing can result in significantly lower costs and add decades of life to paved surfaces.

Maintenance criteria that are standardized and materials and products that are suitable for our climates and service applications need to be developed. These efforts will not only result in better performing infrastructure — they will also create opportunities in our construction and manufacturing industry that are saleable globally. The City would gain knowledge that could be used locally and disseminated if it became a player in this important national project.

Policy Recommendation:

Improved Practices

7. ***That the City encourage the use of advanced techniques, improved technologies, better materials and best practices in all infrastructure programs, and participate in the technical guide for infrastructure initiative.***

Commitment to Research & Innovation

A research investment of $78,000 will save the City $1 million in bridge rehabilitation costs.

The use of standardized construction materials and techniques is commonplace in North America and a good degree of conservatism exists in the engineering community. Risks to public safety and the consequences of using materials and techniques that have not been properly scrutinized and tested are factors. However, we must be more aggressive in our evaluation of new ideas.

To successfully transfer the latest technology to the public domain, two factors are required: industry's support in learning to work with new materials and technologies, and government leadership by encouraging and incorporating application of new technologies into policy guidelines.

Industry is on side, recognizing the benefits of expanding their job market and capitalizing on the $2 trillion world-wide infrastructure need (*Mirza, "Canada's Deteriorating Infrastructure", 1997*). Governments must show leadership in embracing new technology by changing construction and purchasing policies to encourage the use of these new materials and techniques.

For example, the Canada/Quebec Infrastructure Works Program set aside $25 million to encourage local municipalities to showcase new products and technologies in infrastructure rehabilitation (*McGinnis and Redston, "Advanced Materials and Smart Technology — Preparing for 21st Century Opportunities", 1998*).

Locally, the City of Winnipeg invested $78,000 in a research project at the University of Manitoba in cooperation with ISIS Canada. The project involved testing new materials and techniques for use on the Maryland Bridge. That investment will save up to $1 million in the rehabilitation of the bridge, and provide valuable information on the use of advanced composite materials (ACMs) on other structures. Another pilot project saw the City use reinforced carbon fibre strips to upgrade a roof structure at the North End Water Pollution Control Centre, saving about $50,000 over conventional techniques.

These savings are not insignificant. They came to pass, however, only because of a willingness to invest in research and take some risk.

Policy Recommendations:

Update Construction Specifications

8. *That the City's standard construction specifications and general conditions be reviewed to encourage use of innovative practices, technologies and materials. The academic, engineering and construction communities should be involved in this review.*

Commitment to Strategic Research & Innovation

9. *That the City partner with academia to strategically fund research aimed at identifying new or improved materials, technologies and techniques having broad infrastructure application.*

C.) Financial-Based Policy Options

Urban Infrastructure Financing Plan

Infrastructure rehabilitation in Canada is underfunded. In a recent survey, funding shortages were cited by 92 per cent of respondents as the greatest impediment to improving the quality of infrastructure *(Federation of Canadian Municipalities Survey, 1995)*. Issues of much lesser magnitude included political inaction, prolonged public involvement, red tape, environmental assessments and lack of staff. ***We must invest more money into these programs.***

Since traditional funding methods no longer meet our infrastructure reinvestment needs, alternative funding sources must be explored. Although many of the following financing tools have been considered by Council over the years, they have not become part of an overall infrastructure reinvestment strategy, to provide concrete solutions to our infrastructure problem.

An urban infrastructure financing plan must be based on accepted principles in order to be credible, understandable and visible in the organization. These principles should speak to the elements that underlie the financing plan and reflect the values embodied in the plan. We have attempted to outline for Council the principles that we believe ought to be considered in developing an infrastructure financing plan. The list is attached as *Appendix "C"* and is not meant to be exhaustive, but thought provoking.

Policy Recommendation:

Urban Infrastructure Financing Plan

10. That the City create and adopt an urban infrastructure financing plan based on the principles outlined in Appendix "C" of this report.

Accrual Accounting System

This report documents that our government accounting systems do not recognize the costs of infrastructure deterioration as a real cost. Business accounting or accrual accounting does, through a principle called depreciation. This system allows for proper planning and programming of activities.

We need *"some accounting measure that will show a failure to maintain a physical asset as a form of current spending" (Osborne and Gaebler, Reinventing Government, 1992, p. 245)* so that even if maintenance is deferred, it will show up as a cost in the budget.

Policy Recommendation:

Accrual Accounting System

11. That the City adopt a system for showing depreciation on its capital assets and begin the process of accounting for deferred maintenance.

Fully Costed Services

Wherever possible, facilities and services should be provided on a user pay basis. The *"Report on the State of Municipal Infrastructure in Canada" (FCM/McGill, 1996)* showed that sanitary and combined sewage systems, water distribution and water supply installations are among the oldest facilities in Canada, yet they do not top the list of systems in greatest need of repair. That dubious honour is shared by roads, bridges and sidewalks, which are traditionally mill rate supported infrastructure.

Generally speaking, utility operated infrastructure supported through user fees is well maintained, but only when user fees are kept at a level that reflects the real costs of providing those services. When user fees are kept artificially low and systems allowed to deteriorate because of underfunding, an infrastructure backlog or deficit is created. It is important, therefore, to ensure that cost allocations are conducted carefully and routinely and that deviations from proper cost allocations are not made.

Policy Recommendation:

Fully Costed Services

12. ***That the City apply full cost accounting principles to all government services and that pricing of services should reflect the full true costs of service provision.***

Application of User Fees

There are many examples in the public domain where the service provided can be directly identified with the service user. When those circumstances exist for government-supplied services, properly structured user fees should be instituted.

> *Pricing a public service should be considered whenever there are identifiable benefits to specific groups and in instances where there is a communitywide benefit, but where consumption can be measured. However, service charges are inappropriate whenever both users and nonusers benefit from the service or when the cost of collection exceeds the revenue generated (with the possible exception of nominal fees whose real purpose is to reduce waste). (Kelley, Costing Government Services: A Guide for Decision Making, 1989)*

In Canada, the move to user pay systems for refuse collection and disposal is a welcome transition in that these systems have traditionally been mill rate supported and underfunded in terms of reflecting the true costs of this service. A recent survey reported in *"Solid Waste Management" (Kelleher et al., "User Pay", 1996)* clearly shows this trend.

It is widely accepted that the public is far more likely to support a system that allows a direct benchmark comparison for private sector delivery of the same service. The *"Report on the State of Municipal Infrastructure in Canada" (FCM/McGill, 1996)* found that municipal governments that charged user fees were better able to maintain their infrastructure than others.

Policy Recommendation:

Application of User Fees

13. That the City implement properly structured user fees where the user and the service delivered can be identified.

Infrastructure Services Renewal Levy

The traditional approach to underfunding has been to identify new funding sources as a solution to the problem. Winnipeg is no exception to that rule. Revenue sources, such as gasoline taxes, driver's license registration fees, frontage levies, tolls, parking lot and payroll taxes have been suggested.

Many of these new revenue streams have merit and are gaining public acceptance. What may assist this decision-making is clearer public understanding of the costs of repair deferral compared to the economic benefits of non-deferral to the community.

It is widely understood that user fees create accountability for the use of services. In many circumstances, they enhance efficiency and eliminate waste. As well, user fees are almost universally accepted by the public as a method for paying for a readily identifiable good or service. The use of this system to pay for public services must be expanded.

Although each of the following requires Provincial approval, Winnipeg City Council has in the past considered the following user fees for dedication to street system repair:

- a street frontage levy of $1.00 per frontage foot could raise $10 million
- a motor vehicle registration surcharge of $35 could raise $11.5 million
- a fuel tax of two cents per litre could raise $16 million

In addition, Council may wish to pursue a right-of-way levy for use of space in City-owned rights-of-way. The use of right-of-way funding is a concept that is used in other jurisdictions and may have application here. A right-of-way levy essentially involves charging for the use of the space in the City-owned right-of-way to users, primarily utility companies (either private or public).

It is our belief that the above funding vehicles are viable, required and could receive public support if properly articulated and the funds appropriately dedicated. Earmarking of funds to ensure that they are not diverted to general revenues is critical to the successful implementation of new funding sources.

While many witnesses were emphatic that the trust funds must come from the existing tax base, there were some who were prepared to see the imposition of a new dedicated gasoline tax. They believe that the public would be willing to pay, say, an additional 2 cents per litre if it was dedicated and transparent and the Trust Fund was totally secure and could not be raised for other government programs. One witness mentioned that a poll taken in one province a few years ago demonstrated that people would be prepared to pay a new dedicated tax on this basis. (House of Commons Standing Committee on Transportation, "The Renewal of the National Highway System", December 1996)

In addition, this report found that:

There was significant support for the proposal of the Canadian Automobile Association that the Federal government commit 2 cents of the 10-cent per litre Federal excise tax on gasoline with corresponding contributions from the diesel tax and matching funds from the provinces to fund a National Highway Program. This revenue would be dedicated to the NHP and placed in a Trust Fund similar to the U.S. Highway Trust Fund. It would amount to about $1 billion a year and would be sufficient to finance a ten-year national highway program. The Fund would be allocated to the provinces and territories based upon a cost-sharing formula which is fair and reasonable and reflects the needs of all regions of the country. It was noted that based upon recent public opinion polls there is substantial public support for this approach to highway funding.

Clearly, there appears to be widespread public support to diverting more financial resources to infrastructure, provided the approach is rational and principled.

This report recommends that Council's funding policy fundamentally change as it relates to maintenance, repair, rehabilitation and reconstruction of new infrastructure.

Existing maintenance requirements, which serve to allow continued enjoyment of assets (streets, as an example) should, to the extent possible, be funded by user fees and/or dedicated revenues — pay as you go. On the other hand, the funding of intergenerational infrastructure or new construction should in its funding marry appropriate cash and capital financing components.

In order for this shift to be fairly reflected in taxation policy, existing mill rate supported dollars for maintenance should be collected from user fees, and accompanied by a corresponding mill rate reduction. For example, if a new user pay funding source created $12 million/year for street renewal, the existing $4 million/year mill rate supported program would cease, with the net benefit being $8 million/year.

Policy Recommendations:

Shift from Mill Rate to User Fees

14. *Any new user pay funding that relates to property and which replaces existing mill rate supported infrastructure budgets, should be accompanied by a mill rate reduction equivalent to the pre-user fee level of mill rate support.*

Infrastructure Services Renewal Levy

15. *That the City consider developing an "Infrastructure Services Renewal Levy" program which would manage the levying of specific user fees/levies to dedicated infrastructure rehabilitation and renewal programs.*

Pursue Dedicated Levy Legislation

16. *That the City pursue Provincial legislation to allow new funding sources for infrastructure renewal, and that funds raised be dedicated for specific infrastructure purposes only.*

Tax Exempt Bonds

Private sector funding of public projects is a concept of partnering already in use. Even more money for infrastructure investment could become available if the Federal government amended the Income Tax Act to allow tax exemption for interest income on government bonds or other sources of venture capital for designated infrastructure renewal, similar to the case in the United States.

In that jurisdiction investors purchase government issued bonds that carry significantly lower interest rates than commercial paper. They do so because the interest earned on these investments is tax exempt. This has benefits for both the investor and the local government who can price these debentures at much lower than market rates. In doing so, the local government saves on interest costs at the expense of senior levels of government who lose out on the tax revenue. On balance, in our view, the use of interest exempt bonds is an effective way to get more private funds into infrastructure programs which are a public benefit. The government of Canada has been lobbied for many years to initiate this type of program, but has to date resisted.

Policy Recommendation:

Tax Exempt Bonds

17. That the City pursue, with the Province of Manitoba and the Federation of Canadian Municipalities, an amendment to the Income Tax Act to allow tax exempt interest on government bonds raised for designated infrastructure project purposes.

Intergenerational Financing

The issue of cash financing versus debt financing must be carefully thought through. In many jurisdictions, government's current concern with debt and deficit has driven it to the philosophical position of cash financing all capital works. This raises equity issues in that intergenerational projects are being financed for tomorrow's users by today's taxpayers. It is perhaps more appropriate to debt finance some portion of such projects, so that the users of the facilities pay for their costs.

On the flip side, however, debt financing ongoing rehabilitation such as pavement renewals makes little sense. These projects will continue forever and we end up paying debenture debt costs on top of the construction cost — which essentially doubles the cost of the project. More care must be taken in developing financing strategies that match the project life and use patterns to the beneficiaries of the service provided. In this way, use of debt versus cash financing can be better managed.

Policy Recommendation:

Intergenerational Financing

18. That the City should finance infrastructure projects in a manner that properly recognizes project life and replacement patterns.

Cost Shared Programs

Wherever possible, municipalities should take advantage of cost-shared infrastructure renewal programs. The City of Winnipeg is fortunate that the Province has implemented the Urban Capital Project Allocation (UCPA) program. This allows the City to carry out approximately $32 million of capital work per year, using 50 cent dollars. In addition, the Winnipeg Development Agreement (WDA) — a tripartite program — not only creates training and economic development opportunities, but also facilitates upgrading of heritage buildings, riverbanks and neighbourhoods.

Finally, the Canada Infrastructure Works Program (CIWP) was a major benefit to our municipality, in that $87.3 million worth of renewal was accomplished. In *Taking Stock: A Review of the Canada Infrastructure Works Program (Soberman, 1996)* the author reports that the program was a success in that it *"accomplished what it set out to accomplish."* While the program had some weaknesses, the City of Winnipeg, along with other municipalities in Canada, should strongly endorse the development of a second National Infrastructure Program, focusing in part on municipal infrastructure renewal.

Policy Recommendation:

Cost Shared Programs

19. ***That the City join with other Manitoba municipalities and the Provincial Government in lobbying the Federal Government to support implementation of a sustained National Infrastructure Program, focusing in part on municipal infrastructure renewal.***

D.) Alternative Service Delivery Policy Options

Traditionally, infrastructure in Canada has been developed, built and funded by various levels of government. With increasing pressure to minimize deficits and freeze taxes, governments today are seeking innovative methods for financing and alternative service delivery.

The public and private sectors in Canada have long-standing partnering relations in terms of the construction of major municipal infrastructure projects such as roads, bridges and various public facilities. Traditionally, government issued separate design and construction tenders and either cash financed or issued debt to pay for capital works. Alternative Service Delivery (ASD) options are an emerging way for the public sector to provide infrastructure.

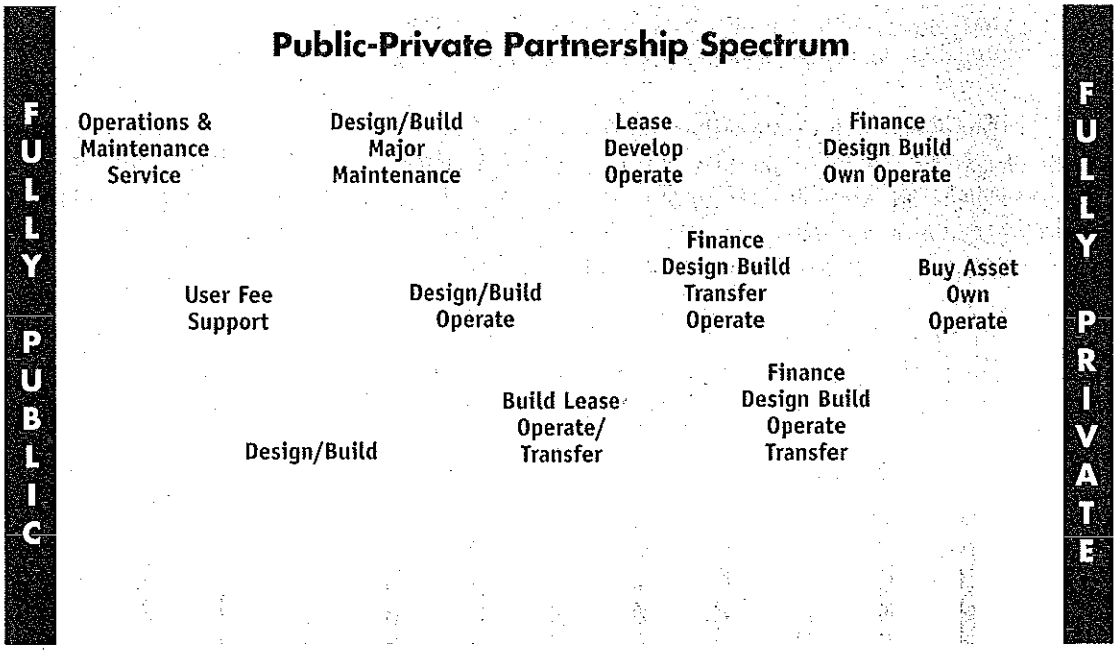
The strengths of the public sector and the efficiencies and know-how of the private sector can be combined in Public-Private Partnerships (PPP's). The public sector assesses need and develops overall guidelines, while the private sector develops and implements the most cost effective solution.

A recent publication entitled *"The 3 Ps of Municipal Infrastructure: How Local Governments Can Use Public-Private Partnerships to Finance, Build and Operate Services" (Shaen, 1997)* sets out many of the concepts and principles of such arrangements. In addition, the City of Winnipeg Audit Report *"Best Practice Review of Frameworks for Alternative Service Delivery" (City of Winnipeg, "Audit Department Report", 1997)* reinforces many of the advantages of public-private partnerships articulated by Shaen. This latter work goes further by suggesting that other alternative service delivery methods are available and should be reviewed.

Conceptual Framework

The potential benefits of adopting a Public-Private Partnership approach to meet our growing infrastructure needs are many and diverse. PPP's are usually associated with large capital works undertakings, and much of their usefulness is associated with the specifics of the individual deal negotiated.

A whole range of strategies exist for governments to pursue involving the use of the private sector. Many of these options can facilitate arrangements that benefit citizens, employees and the private sector. Public-Private Partnerships may take on a variety of forms, sometimes referred to as the PPP spectrum:



In addition to providing important infrastructure, such projects have the added benefit of being labour intensive and therefore good for employment creation in both the public and private sector.

In analyzing the usefulness of Public-Private Partnerships, Council must evaluate them in a policy context. The policy framework for the City is found in a number of key civic policy documents, including the following:

- *Plan Winnipeg...Toward 2010 (June 23, 1993)*
- *City of Winnipeg — Financial Management Plan (May 1995)*
- *City of Winnipeg Audit Department — Best Practice Review of Frameworks for Alternative Service Delivery (September 1997)*
- *City of Winnipeg — Special Operating Agencies Initiative Report (September 1997)*
- *City of Winnipeg — Reshaping Our Civic Government (March 20, 1997)*

Two other recent additions to the literature on public policy considerations discuss the important issues of protecting the public interest: *"Government's New Style" (Zussman, 1997) and "The Politics of Performance Measurement" (Thomas, 1997).* These issues both have important public policy implications.

Another such consideration will be for the City to manage unsolicited private sector proposals. Internal civic as well as external research capacity (perhaps through partnering arrangements with universities) is essential to ensure that taxpayer interests are served to the greatest extent possible.

The conclusion to be reached is that any decisions on the use of alternative delivery strategies must be done using defined processes. Further, emerging trends must be continually monitored to ensure that public policy is sound.

Policy Recommendations:

Implement ASD Options

20. ***That with regard to infrastructure, Council implement its adopted policy on Alternative Service Delivery, as follows:***

    "The City of Winnipeg is committed to providing quality services at an affordable cost on a sustainable basis. To this end, the City will systematically review its programs, services, and delivery mechanisms, and will pursue the most appropriate methods and structures for providing services to achieve the best value for the municipal tax dollar and the optimal balance of overall benefits to the City and its Community."

Public-Private Partnership Research

21. That Council ensure both internal and external research capacity be devoted to monitor and assess PPP trends throughout Canada, and to assist the City in considering local PPP proposals.

PPP Policy Options

As Public-Private Partnerships (PPP's) are an emerging area, there is not yet any standardized terminology that accurately describes the concepts. In our view, there are three broad categories:

- ***Divestiture*** — where the government turns over ownership of the function,
- ***Privatization*** — where the government withdraws from actually delivering a service but remains as a regulator, and,
- ***Partnering*** — where government and private sector act together to jointly provide facilities.

This section is designed to outline policy options for Council to consider in the context of infrastructure rehabilitation and renewal.

• Divestiture Option

The City could adopt a strategy of divesting itself of functions that are not seen to be the core business of government. The Federal Government has divested itself of several areas — including airports, ports, railways and communication systems — which have been turned over to private owners. The new owners cannot afford to jeopardize their investments by neglecting needed upgrades. The result will be a reconfiguration of service delivery and/or the imposition of new user fees.

The decision to divest of an asset is an important, and often irreversible one, and therefore must be carefully contemplated. A thorough study must be conducted that weighs the long-term and short-term costs and benefits to the public. When selling assets, governments must make judicious use of the windfall revenues obtained. These funds should be used to pay down any debts that exist on the asset sold and to acquire new assets. In this way, the inherent value of the asset remains intact for the benefit of future taxpayers. Under no circumstances should government utilize the revenues from asset sales to pay operating costs or finance current expenditures.

• Privatization Option

A variation of divestiture is privatization where government turns over the ownership and operation of facilities to the private sector, yet remains as the regulator in terms of service quality and/or price. In this system, the financial resources and flexibility of the private sector are channeled into service delivery, while the government maintains broad control over service provision. Telephone, cable and natural gas services are good examples.

The use of Special Operating Agencies — which are essentially private sector-like government operations, which run using business approaches and accounting practices — can fit into this category. In addition, the not-for-profit sector can also assume ownership and operation of facilities formerly under government control.

• Partnering Option

The third broad type of arrangement is one of partnering, where the public and private sectors share responsibilities to the mutual benefit of each. Partnerships can exist for the purpose of providing new or improved facilities or for operating existing facilities. Although relatively new to Manitoba, public-private partnerships have been widely used in Europe, the United States and Asia.

A clear indication that partnerships are the way of the future was the May 23, 1997, announcement of *"The Partners in Public Service"* project by the Province and the City. This project is designed to find better ways of providing services to the public, and to ensure that the government at both levels is as affordable and cost-effective as possible.

In Winnipeg, the Charleswood Bridge partnership is an example where the private sector designed, built and financed a twin-span four-lane river crossing and related roadworks, which they will own and maintain for 30 years. The City provided the concept, standards, right-of-way and will lease the project until the expiration, at which time it can either purchase the project or renew the lease. Under this agreement, the taxpayer had no exposure to risk during the construction period and is not responsible for the ongoing maintenance of the project during the lease. While this arrangement may not be suitable in every case, it should be explored for any new capital project the City is considering.

There are an infinite number of variations in terms of divestitures, privatizations and partnering that could offer solutions to infrastructure decline. These policy options are fundamentally designed to ensure that someone is accountable, responsible and committed to keeping the infrastructure elements in question in a satisfactory state of repair.

"The private sector is best able to bring in new technologies and design and construction efficiencies to improve the delivery process for infrastructure projects."

Policy Recommendations:

Pursue Partnering Strategies

22. *That Council pursue partnering strategies for infrastructure works in accordance with the framework of all applicable Council adopted policies.*

PPP Policy Options

23. *That Council adopt as policy, consideration of the entire PPP spectrum as policy options in all large capital projects involving all aspects of infrastructure.*

E.) Winnipeg Transportation Utility Option

In dealing with the policy framework for a sustainable infrastructure system, the SIRP Task Force concluded that a different organizational structure for dealing with transportation systems is worth serious consideration. Similar observations have also been made by others.

Following a comprehensive study of transportation in the Winnipeg Region (herein referred to as the "Capital Region"), *TransPlan 2010* released its final report and recommendations in January 1998. Included was a recommendation to consider an improved decision making model for the management of transportation related assets. Two specific options were presented:

- ***increase government cooperation*** *between the City of Winnipeg, Capital Region municipalities and the Province of Manitoba, or*

- ***create an independent agency*** *with responsibility for transportation matters in the Capital Region.*

While we believe that increased government cooperation is needed, we also believe that new, more proactive approaches are required to make significant progress on the pressing issues of infrastructure renewal.

The creation of an independent agency is of particular interest to the SIRP Task Force. The concept of an independent agency is based in part on the Montreal Metropolitan Transportation Agency created in 1996. The Vancouver Regional District also adopted a similar structure in February 1998 with which to address critical transportation asset management and investment issues.

It is our view, however, that there may be too many obstacles — both political and otherwise — to enable the establishment of an independent agency that would oversee all transportation matters in the Capital Region. The idea of an arm's length agency localized to the City of Winnipeg, however, has merit.

As the previously cited FCM report observed, when infrastructure was funded through the vehicle of a utility, it fared better than when left to the normal budgeting process. City Council, with legislative assistance from the Province, could establish a "Winnipeg Transportation Utility" which would operate much like the City's other utilities. In order to include all facets of transportation and transportation planning, the responsibilities and relationship with Council could include the following:

- managing the financing, development, construction, maintenance and investment in the entire Winnipeg street system, including bridges, structures and transit corridors
- transportation planning
- public transit
- parking authority
- regulation of urban goods movement
- control of access to the street system
- all aspects of budgeting including ability to raise and apply revenues as necessary to deliver services required
- expenditure of funds for these purposes
- implementation of Council-adopted SIRP Task Force recommendations.

It is our view that ultimately the Capital Region concept outlined by TransPlan has merit. The formation of a City of Winnipeg focused utility is a logical initial step to the creation of a more comprehensive solution. Just as Winnipeg's water utility could easily become the regional water authority, so too could a transportation utility be broadened.

Initially, the sources of dedicated revenue could include any of the following, each of which require provincial legislation:

- frontage levy — $1 = approximately $10 million/year
- motor fuel tax — 1¢/litre = approximately $8 million/year
- motor vehicle registration — $35 = approximately $11.5 million/year
- right-of-way levy

There would very likely need to be a transition time — of perhaps five years — for the new utility to move to user fee funding from present sources. As the new fees came on stream, the present mill rate support and provincial grant funding would be phased down. An in-depth business plan would need to be developed to define the details.

In establishing the structure of the "Winnipeg Transportation Utility", Council should be mindful of its Alternative Service Delivery options. The option of creating an SOA for this function, complete with a business plan, is an opportunity worth pursuing.

Policy Recommendation:

Winnipeg Transportation Utility

24. That Council, using its ASD policy, develop a business plan to investigate establishing an arm's length "Winnipeg Transportation Utility", and approach the Province of Manitoba to seek any required enabling legislation.

It should be noted that the issue of revenue sources, funding streams, dedicated levies, frontage levies, user fees, etc., ushers in the spectre of new revenues supplementing existing mill rate supported tax.

This is not necessarily the intention.

The thrust of the fiscal recommendations is to suggest the need to move away from traditional funding sources which are inequitable, inadequate and unsustainable.

There would by necessity have to be a review of taxation in Winnipeg and of the funding relationship between the City and Province. This may be the subject matter of the Committee on Tax Reform, but is not the mandate of the SIRP Task Force.

F.) National Infrastructure Policy (NIP) Option

It is apparent from this report, that resolution to Winnipeg's infrastructure deficit — like that of every other city in Canada — is beyond the financial capability of any municipal government. The fact that the Federal government was able to quickly come to terms with provincial and municipal governments on the need to implement and then extend the Canada Infrastructure Works Program (CIWP) speaks volumes in support of this proposition.

As indicated earlier in this report, we must adopt a more systematic and sustainable approach to infrastructure investment and management. This must be a commitment for participation by all levels of government to address this national problem.

The national debate will soon centre upon the appropriate allocation of the Federal budget surplus. If a national infrastructure program is to become a Federal priority, it must become the subject matter of a concerted Federal/Provincial/Municipal campaign.

Support for Federal Policy

As a major Canadian city and successful participant in the Canada Infrastructure Works Program, Winnipeg can help lead by example. Adopting a comprehensive SIRP is but one step in the process — albeit a very important one. Of equal significance is assisting in the effort to influence the Federal government to adopt as Federal policy a transparent national infrastructure policy.

"Municipal governments... cannot rectify the infrastructure problem on their own."

Attached to this report as Appendix "D" is a Recommended National Infrastructure Policy (NIP) which supports the 1996 and 1997 Annual Premiers' Conference communiqués, and the proposed Guidelines (Appendix "E"), in which the Premiers called for a new NIP. Winnipeg City Council could assist in further lobbying senior levels of government by adopting a resolution endorsing the positions outlined in Appendices "D" and "E".

Policy Recommendation:

National Infrastructure Policy

25. *That the City and Province partner to lobby the Federal Government to enter into a sustainable infrastructure agreement consistent with the recommended National Infrastructure Policy (NIP), as set forth by the ICM (Appendix "D") and the "Proposed Guidelines for a New National Infrastructure Program", as adopted by the Premiers at the 1996 and 1997 Annual Premiers' Conferences (Appendix "E").*

G.) Sustainable Infrastructure Development Policy Options

Developing policy options that result in sustainable solutions to the issue of infrastructure deterioration will have a positive impact on the City of Winnipeg. While many of these initiatives will require cooperation and support from more senior levels of government, all those involved will share in the benefits.

Employment Training Program

As part of the CIWP, Winnipeg conducted a Community Services Infrastructure Renewal Program of $10 million. This program was designed to rehabilitate and/or reconstruct deteriorated street, sidewalk and back lane infrastructure, with a focus on utilizing — in part — a workforce of people presently on social assistance programs.

The result was meaningful employment for an additional 218 persons on social assistance, plus substantial savings to the three levels of government in social assistance costs. In fact, when assistance payment reductions and income taxes were considered, the program essentially cost the Federal government nothing and only marginally more for the province. Programs such as this should form part of any overall approach to infrastructure renewal. A more detailed account of the success of the 1995 Social Assistance Works Program can be found in the publication *"Working: An Infrastructure Renewal Demonstration Project" (City of Winnipeg Social Services Department, 1995).*

In 1997, as a result of the success of the first initiative in the Canada Infrastructure Works Program, a further $4 million was allocated to a social assistance works program under an extension to the CIWP.

While the foregoing discusses the cost-shared social assistance program, it could easily be broadened to encompass other groups. These types of programs can provide useful training and employment skills, and at the same time, replace deteriorated systems.

Policy Recommendation:

Employment Training Program

26. That the City propose to senior levels of government, the delivery of infrastructure programs whose aim in part would be to provide useful training and employment skills development to various target groups.

Capital Region Infrastructure Strategy

It is apparent that infrastructure investments represent a significant ongoing financial commitment, regardless of the level of government. It should also be obvious that any investment decisions made may have implications that exceed jurisdictional boundaries.

Residential and industrial development outside the City's boundaries — in an area commonly referred to as the Capital Region — has implications for Winnipeg and vice versa. Investments in infrastructure must be service and cost-efficient. Accordingly, they should be referenced against publicly developed and adopted planning and development strategies.

The recent public debate around the supply of water by Winnipeg to adjacent municipalities is but one example of where infrastructure funding may be better viewed on a regional basis. We believe adjacent municipalities can make better use of existing infrastructure by sharing facilities and using regional services. These decisions are sustainable, in that they maximize economies of scale and eliminate duplication of services and facilities. Governments that have sustainable development policies must respect them, as they are sound — both philosophically and practically.

The Capital Region Committee and the Province have approved a Capital Region Strategy to support the sustainable economic development of the region. This strategy includes policies and actions for achieving sustainable infrastructure.

A Capital Region strategy that considers all aspects of development, expansion, land use and infrastructure planning is crucial to the City, the Capital Region municipalities and the Province as a whole.

The Provincial government has recently announced the formation of an independent panel to provide recommendations to implement the Capital Region Strategy. This decision has received the support of the Capital Region Committee. The panel is to comprise individuals with expertise in urban and rural planning, as well as municipal government, who will meet with elected officials and hold public consultations. It is hoped that a major item to be considered by this independent panel will be the important question of the supply and delivery of infrastructure in an environmentally responsible and sustainable manner.

Policy Recommendation:

Capital Region Infrastructure Strategy

27. ***That the City pursue — with its neighbours and the Provincial Government — implementation of the Capital Region Strategy that recognizes the importance of the supply and delivery of infrastructure in an environmentally responsible and sustainable manner.***

Cost/Benefit Analysis

The issue of constructing new facilities versus the rehabilitation of existing facilities must be done in an intergovernmental policy context. New facilities should only be constructed after a proper cost benefit analysis has been done. This analysis must include the ongoing costs for operation and preventative maintenance.

With a growing backlog of infrastructure rehabilitation that needs addressing, achieving a balance between new strategic infrastructure needs and infrastructure rehabilitation must occur. We believe that economic benefits must accrue to the community that offset the capital and operating costs of a new facility. Expanding systems and shrinking budgets are not compatible. Looking at new construction in this way is truly sustainable development.

Finally, the regulatory framework can be a useful tool of government to ensure sustainability through better use of existing facilities. For example, water conservation programs will ensure that existing facilities last longer, and are therefore better utilized. Recycling regulations remove materials from waste disposal sites — which extends their life and at the same time creates opportunities for the development of new products and services from the recycled materials.

Policy Recommendation:

Cost/Benefit Analysis

28. That any new publicly-funded infrastructure project be accompanied by a cost/benefit analysis which establishes need and sustainability to clearly justify its construction.

Sustainable Infrastructure Development Policy (SIDP)

There are many ways in which the government and the private sector can and should work together to address the infrastructure deficit, as described earlier in this report. Similarly, the various levels of government must work together to ensure that decisions made at one level do not impact other levels in an unfair and unsustainable way. In the end, there is only one taxpayer to pay the bill for the decisions taken by any level of government.

For example, senior levels of government often create regulations that require junior levels of government to put in place expensive new or upgraded facilities. This is particularly prevalent with respect to environmental issues. However, a proper cost benefit analysis is not always conducted by the senior government to determine if the outcome of the regulation is sustainable.

Any new policy approach with respect to infrastructure should be premised upon the basis of sustainability. Prudent management of intergenerational assets must take into account the principles of sustainability. Earlier, we spoke of the principles and guidelines developed as a result of the Manitoba Round Table on the Environment and Economy (MRTEE) *(Appendix "A")*, and their importance in developing infrastructure policies that are sustainable into the future. In developing the recommendations for this report, we have attempted to follow a number of principles which we developed and are set out in Appendix "B" of this report. We believe these principles should be referred to whenever sustainable infrastructure policy-based decisions are being considered.

Policy Recommendation:

Sustainable Infrastructure Development Policy (SIDP)

29. That the City endorse the principles and guidelines of the MRTEE, and adopt the SIRP Principles for Sustainable Infrastructure Development, as set out in Appendix "B".

Implementation Plan & Recommendation Summary

The Task Force believes this report has made the case for a Strategic Infrastructure Reinvestment Policy. We believe citizens expect government to take steps to protect the public's investment in infrastructure. We also believe Council should be prepared to make the following commitments to:

- Dedicate both financial and human resources to implement the recommendations in this report
- Adopt potentially difficult positions in the short-term to accomplish longer-term goals
- Draw upon private sector resources — including the universities — to assist staff as they have the necessary time to develop innovative, coherent and workable solutions
- Be prepared to make departures from conventional municipal operational and organizational configurations to make progress.

SIRP Implementation Committee

The City should ensure that adopted policy recommendations are implemented. The Task Force recommends establishing a SIRP Implementation Committee as a first step.

This Committee should be chaired by the Chairperson of the Standing Policy Committee on Public Works. The Committee could be a combination of City and industry members and would pick up where this report leaves off, following the process through to completion.

Policy Recommendation:

SIRP Implementation Committee

30. ***That the City establish a SIRP Implementation Committee — headed by the Chairperson of the Standing Policy Committee on Public Works and appropriately resourced through the office of the CAO — with a mandate to implement adopted policy options within 12 months of its appointment.***

Recommendation Summary

The recommendation summary of this report is in two parts. The first restates policies already adopted by Council. In developing future priority plans and budgets, Council should be mindful of its stated policies regarding infrastructure and endeavour to be consistent with its approved policies.

The second part presents the new ideas and directions developed during our review. To assist Council with the difficult task of implementation, we have outlined what we believe should be the action next to each policy recommendation.

Existing Council Policies

Plan Winnipeg... Toward 2010

Our regional services and facilities represent a major investment of public funds. It is important that this investment be protected. The overall cost of orderly maintenance and reconstruction programs is less than deferral, which eventually requires expensive catch-up work.

Plan Winnipeg Policy 5C-01— Maintain Existing Infrastructure

The City shall maintain the existing capacity of regional street, bridge, and public transit systems as its highest priority item for expenditure of funds when developing the yearly and five-year transportation capital programs.

Plan Winnipeg Policy 5C-36 — Provide Infrastructure Maintenance and Renewal

The City shall endeavour to provide basic maintenance and renewal of its infrastructure of pavements, sewers and watermains.

Financial Management Plan — 10 Goals for a Stronger Financial Future

...help the City balance its spending priorities with its available resources so that it can meet its obligations while improving Winnipeg's economic position.

The City will develop a detailed list of total infrastructure liabilities with priorized plans to repair them and identified funding sources during the next term of Council.

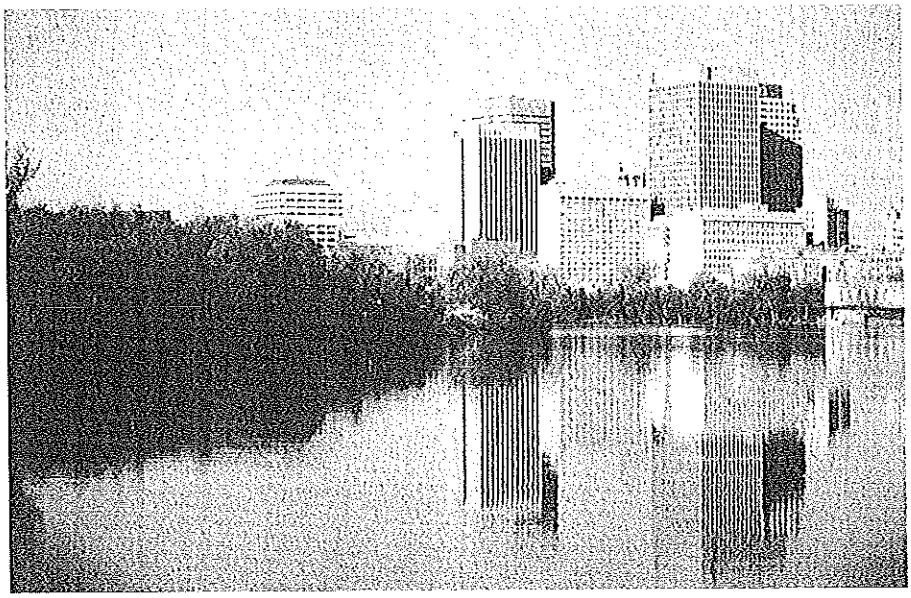
Priorities for Winnipeg — Building Toward the 21st Century

"Managing our Investment in Infrastructure" identifies five specific areas for attention:

- *developing a residential streets renewal program*
- *investing strategically in new infrastructure*
- *re-investing in hydro and water quality*
- *extending the life of the aqueduct*
- *committing to long-range planning.*

Alternative Service Delivery

The City of Winnipeg is committed to providing quality services at an affordable cost on a sustainable basis. To this end, the City will systematically review its programs, services, and delivery mechanisms, and will pursue the most appropriate methods and structures for providing services to achieve the best value for the municipal tax dollar and the optimal balance of overall benefits to the City and its Community.



Policy Option/Implementation Plan Summary

Management, maintenance and investment recommendations are all based on a "knowledge/ consequence" premise. Knowledge of the facts and consequences of decisions made or failed to be made is, in the final analysis, the most important contribution of these recommendations. Decisions on these recommendations are always the prerogative of elected officials.

A.) Infrastructure Maintenance Policy Options

Policy Option	Implementation Plan
Life Cycle Costing 1. That all capital programs for new or rehabilitated infrastructure be subjected to life cycle costing analysis to determine the most cost effective options for consideration.	A Steering Committee be established to develop a standardized life cycle costing protocol for the City, drawing upon the work already done, as cited in this document.
Minimize Deferred Maintenance 2. That ideally, maintenance for existing infrastructure should only be deferred if the impact on the life expectancy and life cycle of the asset is documented to be minimal.	Departments be instructed to develop for Council properly documented maintenance requirement needs, priority schedules, along with impact analyses.
Factor Maintenance into Initial Costs 3. That when new or upgraded facilities are proposed, they be accompanied by resulting incremental maintenance costs, linked into a parallel maintenance budget.	The capital budget process be modified to include a link to the current budget to include maintenance costs.
Computerized Maintenance Management Systems (CMMS) 4. That civic department preventative maintenance programs be funded by Council to be information current, and supported by Computerized Maintenance Management Systems (CMMS).	Where no CMMS exist, Council request the subject department to develop a fully costed proposal.
Management of Asset Data 5. That the CAO Secretariat be assigned and resourced to coordinate the City's infrastructure asset data management.	That the recommendation be referred to the CAO for implementation.

B.) New Technology Policy Options

Policy Option	Implementation Plan
Advanced Techniques & Technologies 6. That the City encourage the application of "intelligent" technology, new methodologies and innovative products such as ACMs in infrastructure renewal, rehabilitation, construction or preventative maintenance programs.	That the City host an annual technology transfer workshop for staff, consultants, contractors, and academia.
Improved Practices 7. That the City encourage the use of advanced techniques, improved technologies, better materials and best practices in all infrastructure programs, and participate in the technical guide for infrastructure initiative.	Preliminary engineering budgets should recognize the need to explore new and innovative techniques, technologies and materials.
Update Construction Specifications 8. That the City's standard construction specifications and general conditions be reviewed to encourage use of innovative practices, technologies and materials. The academic, engineering and construction communities should be involved in this review.	That the structure and objectives of the existing Standard Specification Committees be reviewed and modified, as necessary.
Commitment to Strategic Research & Innovation 9. That the City partner with academia to strategically fund research aimed at identifying new or improved materials, technologies and techniques having broad infrastructure application.	The City should annually budget $0.5 million beginning in 1998, and direct these funds to new technologies research.

C.) Financial-Based Policy Options

Policy Option	Implementation Plan
Urban Infrastructure Financing Plan 10. That the City create and adopt an urban infrastructure financing plan, based on the principles outlined in Appendix "C" of this report.	That the recommendation be referred to the CAO for implementation.
Accrual Accounting System 11. That the City adopt a system for showing depreciation on its capital assets and begin the process of accounting for deferred maintenance.	That the recommendation be directed to the CAO for implementation.
Fully Costed Services 12. That the City apply full cost accounting principles to all government services, and that pricing of services should reflect the full true costs of service provision.	That the recommendation be directed to the CAO for implementation.
Application of User Fees 13. That the City implement properly structured user fees where the user and the service delivered can be identified.	Examine all possible user fees and their applications.
Shift from Mill Rate to User Fees 14. Any new user pay funding that relates to property and which replaces existing mill rate supported infrastructure budgets, should be accompanied by a mill rate reduction equivalent to the pre-user fee level of mill rate support.	Refer to the CAO for report on impact.
Infrastructure Services Renewal Levy 15. That the City consider developing an "Infrastructure Services Renewal Levy" program which would manage the levying of specific user fees/levies to dedicated infrastructure rehabilitation and renewal programs.	Refer to the CAO for report back on implementation.

Policy Option	Implementation Plan
Pursue Dedicated Levy Legislation 16. That the City pursue Provincial legislation to allow new funding sources for infrastructure renewal, and that funds raised be dedicated for specific infrastructure purposes only.	That the City and Province jointly consider a strategy of adopting legislated levies dedicated to infrastructure renewal.
Tax Exempt Bonds 17. That the City pursue, with Province of Manitoba and the Federation of Canadian Municipalities, an amendment to the Income Tax Act to allow tax exempt interest on government bonds raised for designated infrastructure project purposes.	That the City pursue Provincial support to lobby the Federal government for such a change.
Intergenerational Financing 18. That the City should finance infrastructure projects in a manner that properly recognizes project life and replacement patterns.	That the recommendation be implemented.
Cost Shared Programs 19. That the City join with other Manitoba municipalities and the Provincial Government in lobbying the Federal Government to support implementation of a sustained National Infrastructure Program, focusing in part on municipal infrastructure renewal.	That the City approach the Province of Manitoba, UMM, MAUM, and FCM to jointly coordinate efforts to implement this recommendation.

D.) Alternative Service Delivery Policy Options

Policy Option	Implementation Plan
Implement ASD Options 20. That with regard to infrastructure, Council implement its adopted policy on Alternative Service Delivery, as follows: *"The City of Winnipeg is committed to providing quality services at an affordable cost on a sustainable basis. To this end, the City will systematically review its programs, services, and delivery mechanisms, and will pursue the most appropriate methods and structures for providing services to achieve the best value for the municipal tax dollar and the optimal balance of overall benefits to the City and its Community."*	That the recommendation be implemented.
Public-Private Partnership Research 21. That Council ensure both internal and external research capacity be devoted to monitor and assess PPP trends throughout Canada, and to assist the City in considering local PPP proposals.	That the recommendation be implemented in the context of the Alternative Service Delivery framework.
Pursue Partnering Strategies 22. That Council pursue partnering strategies for infrastructure works in accordance with the framework of all applicable Council adopted policies.	That the recommendation be implemented in the context of the Alternative Service Delivery framework.
PPP Policy Options 23. That Council adopt as policy, consideration of the entire PPP spectrum as policy options in all large capital projects involving all aspects of infrastructure.	That the recommendation be referred to the CAO for implementation pursuant to the ASD policy.

E.) Winnipeg Transportation Utility Option

Policy Option	Implementation Plan
Winnipeg Transportation Utility 24. That Council, using its ASD policy, develop a business plan to investigate establishing an arm's length "Winnipeg Transportation Utility", and approach the Province of Manitoba to seek any required enabling legislation.	That the recommendation be referred to the CAO for implementation.

F.) National Infrastructure Policy (NIP) Option

Policy Option	Implementation Plan
National Infrastructure Policy 25. That the City and Province partner to lobby the Federal Government to enter into a sustainable infrastructure agreement consistent with the Recommended National Infrastructure Policy (NIP), as set forth by the ICM (Appendix "D") and the "Proposed Guidelines for a New National Infrastructure Program", as adopted by the Premiers at the 1996 and 1997 Annual Premiers' Conferences (Appendix "E").	That the City approach the Province of Manitoba, UMM, MAUM, and FCM to jointly coordinate efforts to implement this recommendation.

G.) Sustainable Infrastructure Development Policy Options

Policy Option	Implementation Plan
Employment Training Program 26. That the City propose to senior levels of government, the delivery of infrastructure programs whose aim in part would be to provide useful training and employment skills development to various target groups.	That the City approach the Province to assist in implementing this recommendation.

Capital Region Infrastructure Strategy

27. That the City pursue — with its neighbours and the Provincial Government —implementation of the Capital Region strategy that recognizes the importance of the supply and delivery of infrastructure in an environmentally responsible and sustainable manner.

That the City pursue with the Capital Region Strategy Panel the implementation of this recommendation.

Cost/Benefit Analysis

28. That any new publicly-funded infrastructure project be accompanied by a cost/benefit analysis which establishes need and sustainability to clearly justify its construction.

That the recommendation be implemented.

Sustainable Infrastructure Development Policy (SIDP)

29. That the City endorse the principles and guidelines of the MRTEE, and adopt the SIRP Principles for Sustainable Infrastructure Development, as set out in Appendix "B".

That the recommendation be implemented.

Implementation Plan Policy Option

Policy Option	Implementation Plan
SIRP Implementation Committee 30. That the City establish a SIRP Implementation Committee — headed by the Chairperson of the Standing Policy Committee on Public Works and appropriately resourced through the office of the CAO — with a mandate to implement adopted policy options within 12 months of its appointment.	That the recommendation be implemented.

Conclusion

The SIRP Task Force mandate was both challenging and necessary for the City's future. Like all major cities in Canada, the reality facing Winnipeg is that it can no longer defer infrastructure financial planning and investment decisions. The absence of infrastructure policies across Canada in the past has resulted in a national infrastructure deficit that could balloon to $200 - $300 billion in as little as five to 10 years if sound decisions are not made *(Mirza, "Canada's Deteriorating Infrastructure", 1997).*

As a society, we have agreed to subscribe to the principles of sustainability related to the use of natural resources, social and economic development. These same principles — which underpin the recommendations of this Task Force — are no less important in their application to infrastructure management and investment decisions.

This report demonstrates the connection between infrastructure and our local and national economies. It lays out a systematic approach to asset management and investment decision-making. It provides a framework within which decisions can be made. It allows for a reasonable transition from debt to cash financing, where appropriate. It recognizes the importance of appropriate beneficiary share allocation. It provides a platform for the assembly and use of key asset data, essential to informed decision-making. It identifies opportunities implicit in showcasing Canadian-developed infrastructure-related technologies.

From the Task Force perspective, it is imperative that there not be any delay in either dealing with the recommendations or in implementing them once adopted.

Given the magnitude of the infrastructure challenge, and the opportunities implicit in addressing it, every effort should be made to implement the recommendations within a 12-month period.

In the final analysis, this report provides a knowledge and consequence framework for Council — with the support of the public — to make informed choices. It provides the tools with which decisions can be made. It cannot however, make those decisions — that prerogative remains with our elected civic leaders.

The choice to make knowledge and consequence-based decisions within the context of a strategic infrastructure reinvestment policy, now lies squarely with City Council.

Appendices:

"A" Manitoba Round Table on Environment and Economy
Principles and Guidelines of Sustainable Development

"B" SIRP Task Force —
10 Principles for Sustainable Infrastructure Development

"C" SIRP Task Force —
Urban Infrastructure Financing Principles

"D" Recommended National Infrastructure Policy (NIP)
Infrastructure Council of Manitoba

"E" Proposed Guidelines for a New National Infrastructure Program
1996 Premiers' Conference

"A" Manitoba Round Table on Environment & Economy Principles & Guidelines for Sustainable Development

Sustainable Development Principles

Principles and guidelines of sustainable development *a principle from Manitoba Round Table on Environment and Economy, MRTEE*

Citation: *Manitoba Round Table on Environment & Economy. "Schedule 1: Principles and guidelines of sustainable development." - p. 13. In A discussion paper for a sustainable development act. Winnipeg: Manitoba Round Table for Environment & Economy, 1994.*

Principles

1. INTEGRATION OF ENVIRONMENTAL AND ECONOMIC DECISIONS: requires that we ensure economic decisions adequately reflect environmental impacts including human health. Environmental initiatives shall adequately take into account economic consequences.

2. STEWARDSHIP: requires that we manage the environment and economy for the benefits of present and future generations.

Stewardship requires the recognition that we are caretakers of the environment and economy for the benefit of present and future generations of Manitobans. A balance must be struck between today's decisions and tomorrow's impacts.

3. SHARED RESPONSIBILITY: requires that all Manitobans acknowledge responsibility for sustaining the environment and economy, with each being accountable for decisions and actions, in a spirit of partnership and open cooperation.

4. PREVENTION: requires that we anticipate, prevent or mitigate significant adverse environmental (including human health) and economic impacts of policy, programs and decisions.

5. CONSERVATION: requires that we maintain essential ecological processes, biological diversity and life-support systems of our environment; harvest reusable resources on a sustained yield basis; and make wise and efficient use of our renewable and non-renewable resources.

6. WASTE MINIMIZATION: requires that we endeavour to reduce, reuse, recycle and recover the products of our society.

7. ENHANCEMENT: requires that we enhance the long term productive capability, quality and capacity of our natural ecosytems.

8. REHABILITATION AND RECLAMATION: requires that we endeavour to restore damaged or degraded environments to beneficial uses.

Rehabilitation and reclamation require ameliorating damage caused in the past. Future policies, programs and developments should take into consideration the need for rehabilitation and reclamation.

9. SCIENTIFIC AND TECHNOLOGICAL INNOVATION: requires that we research, develop, test and implement technologies essential to further environmental quality including human health and economic growth.

10. GLOBAL RESPONSIBILITY: requires that we think globally when we act locally.

Global responsibility requires that we recognize there are no boundaries to our environment, and that there is ecological interdependence among provinces and nations. There is a need to work cooperatively within Canada, and internationally to accelerate the merger of environment and economics in decision making and to develop comprehensive and equitable solutions to problems.

Guidelines

1. EFFICIENT USE OF RESOURCES: we shall encourage and support development and application of systems for proper resource pricing, demand management, and resource allocation together with incentives and disincentives to encourage efficient use of resources and full environmental costing of decisions and developments.

2. PUBLIC PARTICIPATION: we shall establish appropriate forums which encourage and provide opportunity for consultation and meaningful participation in decision making processes by all Manitobans. We shall endeavour to ensure due process, prior notification and appropriate and timely redress for those affected by policies, programs, decisions and developments.

3. UNDERSTANDING AND RESPECT: we shall be aware that we share a common physical, social and economic environment in Manitoba. Understanding and respect for differing social and economic views, values and traditions and aspirations is necessary for equitable management of these common resources. Consideration must be given to the aspirations, needs and views of various regions and groups in Manitoba.

4. ACCESS TO ADEQUATE INFORMATION: we shall encourage and support the improvement and refinement of our environmental and economic information base and promotion of the opportunity for equal and timely access to information by all Manitobans.

5. INTEGRATED DECISION-MAKING AND PLANNING: we shall encourage and support decision making and planning processes that are open, cross-sectoral, incorporate time horizons relevant to long-term implications and are efficient and timely.

6. SUBSTITUTION: we shall encourage and promote the development and use of substitutes for scarce resources where they are both environmentally sound and economically viable.

5. SHARED RESPONSIBILITY AND ACCOUNTABILITY

- user fees
- public-private partnerships
- privatization

6. STEWARDSHIP

- manage infrastructure development needs in a safe, environmentally sound, and economically sustainable manner
- balance between today's decisions regarding stabilizing/reducing infrastructure deficit and tomorrow's impact on economic growth and quality of life

7. ENVIRONMENTAL MANAGEMENT

- demonstrate "due diligence"
- improve environmental performance
- safe and sound environmental practices
- increase environmental awareness
- voluntary accreditation

8. POLLUTION PREVENTION

- encourage and promote the development and use of substitutes for scarce resources where they are both environmentally sound and economically viable

9. UNDERSTANDING AND RESPECT

- equitable management of infrastructure investment benefits
- deal with the most urgent infrastructure issues in a consistent and thoughtful manner

10. SUSTAINABILITY

- all infrastructure development projects (public and private sectors) should be sustainable
- all organizations (public and private sectors) should implement their own sustainable development policy

"C" SIRP Task Force — Urban Infrastructure Financing Principles

The goals of an Infrastructure Financing Plan should be to provide adequate and secure funds to deliver an infrastructure investment program that supports new visions and moves towards a sustainable future. The new plan should be based upon the following principles:

1. **Stable and Predictable:** Capital, operating and maintenance funding should be stable over time, predictable in magnitude, and provide long-term financial commitment to a new vision.

2. **Open:** The sources and allocation of funds should be open, clearly presented, and easily understood by decision makers and the public to ensure accountability and fairness.

3. **Fully Costed:** The City should apply full cost accounting principles to all current or new utility operated infrastructure services sustained by user fees.

4. **Least Cost:** The model should foster an infrastructure operating at the least possible total cost to the environment, society and economy.

5. **Debt Financing:** Debt Financing strategies for intergenerational infrastructure should portion project life and use patterns between benefiting generations.

6. **Cash Financing:** Regular ongoing, preventative maintenance programs should be cash financed so as to proportionately allocate cost to beneficiary.

7. **Simple:** The process should not be administratively complex.

8. **Adequate Funding:** When senior levels of government assign additional infrastructure responsibilities or standards onto municipal governments, access to adequate revenues should be provided at the same time.

9. **User Pay:** Funds should be increasingly derived from users, with many of the services provided by infrastructure to be treated as a utility where the user is charged based on consumption or use.

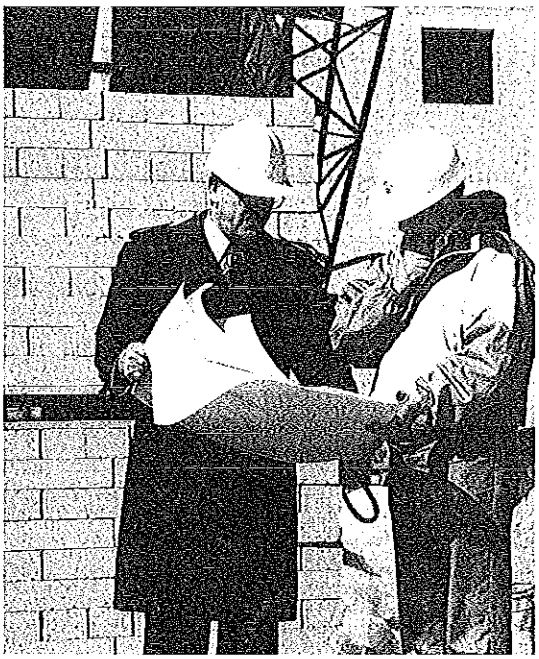
10. **Dedicated:** Revenues derived from user pay methods should be dedicated by law to specific improvements, or projects that support the overall infrastructure plan.

11. **Public Involvement:** Public involvement in the design, financing and implementation decisions for the model, resulting from information and consultation programs, should be an integral part of the process.

12. **New Technology:** Promote the application of new technologies which improve life cycle costs and help protect the environment.

13. **System Optimization:** Funding should be applied where practicable to optimize the existing infrastructure.

14. **Measurable Results:** Performance indicators should be used to measure progress and report to decision makers and the public.



"D" Recommended National Infrastructure Policy (NIP)

(as prepared by the Infrastructure Council of Manitoba-ICM)

National Infrastructure Policy (NIP) - Recommendation

To address Canada's growing infrastructure deficit, the federal government must adopt as a matter of good governance, a *National Infrastructure Policy (NIP)*. Its objective should be to address municipal infrastructure, the national highways system and strategic infrastructure investments, in a sustainable manner which levers matching contributions from other levels of government and/or the private sector.

Federal Deficit

The current federal government has made the reduction and elimination of the federal deficit a national goal. Balancing the nation's finances to set a competitive economic platform is an important objective.

The *"Infrastructure Deficit"*

If the above approach is supportable, then the federal government cannot ignore a second deficit, namely the ***"infrastructure deficit".*** This is defined as the ***gap between what we as a nation invest as compared to what we ought to invest in our infrastructure to optimize long run national wealth productive capacity and economic efficiency.*** Canada's infrastructure deficit is staggering, it is growing and like the balance sheet deficit, it ***cannot be ignored.***

The 1996 ***Federation of Canadian Municipalities/McGill University*** report conservatively estimates a ***$44 billion municipal infrastructure deficit*** to sustain what we now have in this country.

The Transportation Association of Canada (TAC) reports adopted by the federal and provincial governments, identified a *national highways system* strategically important to east/west competitiveness, and to the north/south movement of goods and services to take full advantage of NAFTA and FTA trade opportunities. The estimated investment dependant upon the approach taken — ***$12-18 billion*** over a 10 year period.

Federal Fiscal Dividend

The federal government has committed itself to applying 50% of the surplus towards national debt reduction, and the remaining 50% towards enhancing existing programs and/or funding new programs. If a National Infrastructure Policy is to become a part of the new fiscal priority, now is the time to make the case.

National Infrastructure Policy (NIP)

Fiscally Responsible and Strategically Focused

No Parliamentarian supports the notion of allowing the nation's infrastructure to deteriorate to the point where it fails to service Canadian needs. That being the case, ***the question therefore is not whether to adopt a National Infrastructure Policy, but rather at what level and under what arrangements.***

The Policy - Target Areas

The *National Infrastructure* Policy should target three (3) broad areas:

a) ***municipal infrastructure*** which must be rehabilitiated in order to sustain existing levels of commerce and attract new opportunities. This program would target the ***$44 billion "municipal infrastructure reinvestment deficit";***

b) ***national highways system*** to address east/west and north/south trade, commerce and tourism opportunities. This would target the ***$12 - 18 billion "national highway systems deficit";*** and

c) ***strategic infrastructure investments*** which serve to generate new areas of economic activity and therefore new wealth.

Application of New Technologies

The application of new hard and soft Canadian technologies, that realize cost savings and positive life cycle benefits to infrastructure, and that enable more efficient use of infrastructure, should be encouraged. This allows Canadians to showcase their application to the rest of the world, address national problems, create new export opportunities and lower user costs. *This approach is both practical and strategic in nature.*

Duration

Given ***"Canada's Infrastructure Deficit"*** a National Infrastructure Policy must be sustained over an initial ten (10) year period. The longer we delay dealing with the failing infrastructure, the greater the cost and the more real is the risk of losing our edge as a leading industrialized country. Studies have consistently shown a direct relationship between an economy's performance and the level of investment made in infrastructure.

Size

Simply suggesting more money does not address the budgetary dilemma. An annual level of $600 million over a ten (10) year plan matched by the provincial and municipal governments would mark an excellent beginning to rebuilding Canada's municipal infrastructure. This amount is consistent with the 1997 CIWP level of funding.

In the context of National Highways, the federal government has divested itself of *"cost centres"* and transferred them directly to the user. It is no longer involved in rail, air, marine and air traffic control having transferred them to the private sector were the user foots the bill. This divestiture and cost elimination notwithstanding, the federal treasury has kept the annual $4.2 billion income (approximate) generated from road use fuel excise taxes.

An annual commitment of $600 million (approximate revenue from the 1.5 cent per litre increase in the excise tax on road use gasoline levied in February 1995), matched by the provincial governments over a ten (10) year period would be an appropriate initial funding level. This tax increase instituted as a deficit reduction measure, should be returned to highway users now that the deficit reduction targets have been exceeded.

Governments should also examine non-traditional forms of funding infrastructure investment through ***Public Private Partnerships (PPP).*** Considerable work has been done in this field by the ***Canadian Construction Association, Canadian Council on Public Private Partnerships*** and the ***Standing Committee on Transportation*** Report of February 1997. The notion of PPP is well advanced in some jurisdictions in Canada and many throughout the United States. We should take serious note of their success and failures and learn from them.

Policy Impact

A National Infrastructure Policy (NIP) combined with already announced government initiatives to increase investment in Research and Development, University Infrastructure, expansion of the Network of Centres of Excellence Program, Youth Training Initiatives, continuation of the Team Canada approach to soliciting new business for Canadian enterprise, along with other initiatives, allows for the following:

**no new money is added.* The annual $600 million investment in municipal infrastructure continues the existing CIWP commitment. Further, it levers an additional annual contribution of $1.2 billion from municipalities, the provinces and/or the private sector;

**enhanced infrastructure and national highways generates economic expansion* by facilitating the expansion of commerce. This *creates higher employment and therefore larger tax revenues to government* as a result of increased economic activity;

the National Highway System component is funded from within an existing revenue flow, which still generates a net $3.6 billion (approximate) to the federal treasury after the proposed annual NHS allocation, an amount in excess of 1994/95 road use excise tax revenues. It focuses the investment and levers a matching $600 million annually from the provinces. The investment also serves to protect and enhance the estimated 4.16 million jobs now sustained through Canada's export industries;

**strategic infrastructure investments* would be funded from within the two (2) primary program components, namely municipal and national highways;

the **Canada Infrastructure Works Program (CIWP) recently extended, attained or exceeded many of its objectives. A sustained program can only build upon a good start already made;

**the above initiatives can be shown to be a plan aimed at *"rebuilding Canada"* providing new jobs, a hope of economic opportunity, confidence in the future, building upon Canada's strength as a nation and positioning Canada to take advantage of the FTA and NAFTA accords.

Conclusion

The ***"infrastructure deficit"*** can no longer be ignored. A clear, transparent ***National Infrastructure Policy*** is no less important to the nation's future than its needs related to health, education, research, youth training, safety net and debt/deficit management. It addresses an undeniable national need, sharpens Canada's ability to compete, and enables enhanced and new job opportunities on a sustained basis.

The *National Infrastructure Policy* must reflect and respect the principles of sustainable development. To perpetuate the infrastructure deficit by under investing today contravenes the most fundamental principle of sustainable development: that we should meet current infrastructure needs and not impair the ability of future generations to meet their needs by *"living on our capital."*

Failure to address this issue will result in an unsustainable infrastructure unable to support our competitiveness domestically or internationally, unable to sustain our existing quality of life, and unable to allow Canadian enterprise to fully take advantage of the NAFTA/FTA accords. It will leave as a legacy to future generations, an ***infrastructure deficit*** the size of which will be financially unmanageable.

— November 1997

"E" Proposed Guidelines for a New National Infrastructure Program

(as adopted by Premiers and Territorial Leaders at the 1996 Premiers' Conference)

Scope and Focus

A new national infrastructure program should:

- Focus on strategic provincial-territorial infrastructure priorities which offer substantial long term economic benefits; these priorities may be of one type (eg. highways) or of several types (eg. highways, telecommunication, ports).

- Have a value of no less than the current infrastructure program.

Financing

The funding arrangements for the new program should:

- Be consistent with current fiscal frameworks.

- Include a review of the federal allocation formula used in the current program.

- Include the discretion for flexible partnerships on individual projects (eg. federal-provincial/territorial, federal-provincial/territorial-municipal and federal-provincial/territorial-private); this discretion for flexible partnerships does not prevent partnerships of one type only (eg. federal-provincial/territorial).

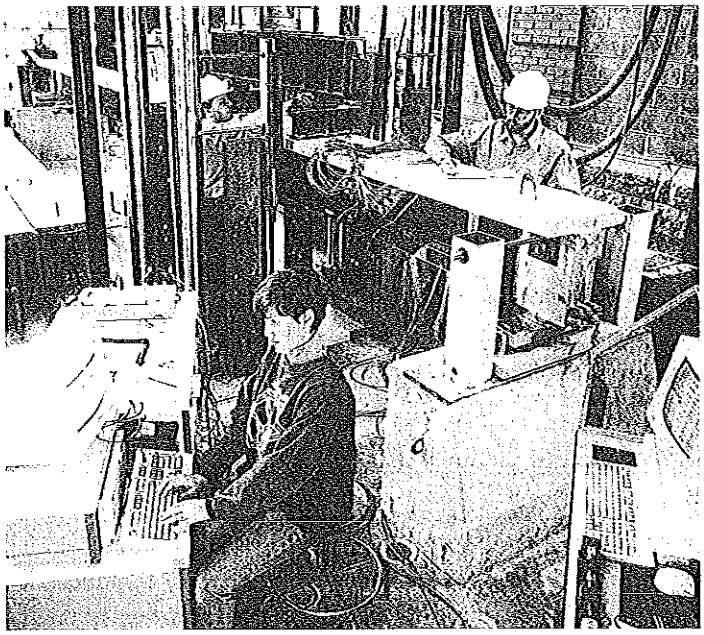
- In cases of federal-provincial/territorial partnerships, the federal contribution will be no less than one-half; in cases where there is a third partner, the federal contribution will be no less than one-third.

Development, Timing and Administration

A new national infrastructure program should:

- Incorporate the best operational and administrative features of the current program.

- Be developed by Ministers of Finance with a final report and recommendations to First Ministers by November 1996 with a view to implementation by April 1, 1997 with a term of approximately three years.



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