



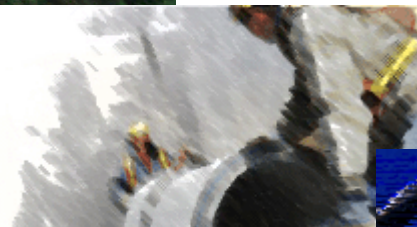
DRAFT

UPDATE Water and
Wastewater
Master Plan

Executive Summary

Servicing

for a safe and healthy environment



May 2009



Achieving Sustainable Water and Wastewater Servicing |Executive Summary

"Sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

– United Nations Brundtland Commission

1.1 The Challenge

The need for York Region to plan for long term water and wastewater servicing is urgent. York Region is the fastest growing region in the Greater Toronto Area and one of the fastest growing municipalities in all of Canada.

- The provincial government has forecast York Region's population will grow to 1.5 million by 2031.
- Other forecasts have indicated a population of as much as 1.8 million by 2051.
- Economic growth is expected to double over the same period – increasing from 462,000 jobs in 2006 to 799,000 jobs by 2031, and potentially reaching over 950,000 jobs by 2051.

This growth will put enormous pressure on the Region's environment and its infrastructure. The demand for water and wastewater servicing resulting from the rapid population and economic growth will eventually exceed water and wastewater system capacities. Limitations on where this growth can occur have a direct impact on individual components of the existing water and wastewater systems serving York Region. Furthermore, recent changes to the regulatory framework in Ontario mean additional, more stringent conditions will likely be imposed on existing systems.

On June 22, 2006, Regional Council authorized the Water and Wastewater Master Plan Update study, with the goal of determining how best to continue to provide the highest quality servicing York Region residents and businesses have come to expect. Regional Council's authorization marked the first time Water and Wastewater Master Plans were updated together, combining the original 1997 master plans, the 2002 York-Durham Sewage System Master Plan Update, and the 2004 York Water System Master Plan Update.

York Region's commitment – *"To provide long-term water and wastewater services for the communities of York Region, that are safe, well-managed, and sustainable, ensuring in so doing that the natural heritage and environment of the Region are preserved and protected, that the projects, programs and policies supporting the servicing are delivered in a fiscally responsible manner, that the works and services are in compliance with applicable legislation, regulations and guidelines, and that the delivery of water and wastewater works and services is integrated with the Region's other infrastructure, planning, and growth management responsibilities."*

Planning for growth is a key municipal responsibility. York Region has established an award winning approach through the *York Region Sustainability Strategy – Towards a Sustainable Region*. The foundation of the strategy involves integration of economic, environmental, and community issues to facilitate decisions about growth management that are responsive, rational, and timely.



The same approach was used for planning long term water and wastewater servicing.

The *York Region Water and Wastewater Sustainability Strategy* emphasizes:

- Transparency
- Equity
- Accountability
- Community Involvement
- Monitoring
- Continuous Improvement

Current Servicing

York Region's **water system** is divided into two parts:

- (1) the York Water System, which serves the larger urban communities of York Region
- (2) individual systems serving smaller communities

York Region's **wastewater system** is also divided into two distinct components:

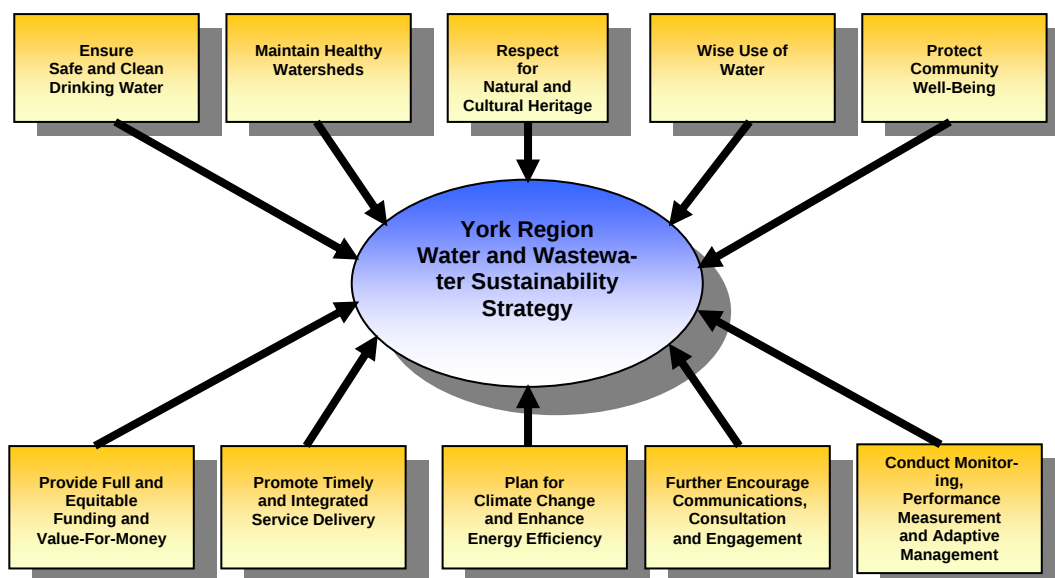
- (1) the York-Durham Sewage System (YDSS), which serves York Region's larger urban communities
- (2) individual systems serving smaller communities.

Future Needs

Population and employment forecasts were used to determine future water and wastewater flows.

A comparison between existing water and wastewater system capabilities, regulatory and Regional requirements, and future flows allowed for the identification of future servicing needs.

Different approaches to servicing future needs were identified and evaluated using criteria based on the main themes contained in York Region's *Water and Wastewater Sustainability Strategy*.



A main feature of York Region is that it contains a watershed divide.

Streams and rivers in the upper portion of the Region drain to Lake Simcoe, which lies in the Lake Huron watershed, while streams and rivers in the lower portion of the Region drain to Lake Ontario.

This presents a challenge for York Region because provincial law and the Great Lakes Charter Agreement bans new or increased transfers of drinking water from one Great Lakes watershed to another (known as intra-basin transfers), unless specific conditions known as exception criteria are met.

Public and Agency Involvement

York Region actively engaged the public and agency stakeholders throughout the Master Plan Update study, using a combination of communications strategies, including newsletters, public consultation centres, and a web-portal.

Liaison with First Nations was maintained throughout the study to ensure their interest and historical connections in the Region were understood and respected.

York Region also established a Technical Advisory Committee (TAC), with representatives from York Region, Provincial Government Ministries (including the Ministries of Environment, Municipal Affairs and Housing, and Natural Resources), conservation authorities, neighbouring regional and York Region local area municipalities, and the York Region study team. The TAC discussed issues, provided input, and made recommendations about long term water and wastewater servicing for the Region.

The issues identified from the various consultation activities were used to guide the Master Plan Update study.

All comments were addressed and incorporated in the selection of the preferred alternative and in the development of recommendations for policies and programs to support sustainable, long term servicing

Preferred Alternative

Public input identified four top priorities for York Region's long term water and wastewater servicing and these were translated into evaluation criteria. The four top priorities were:

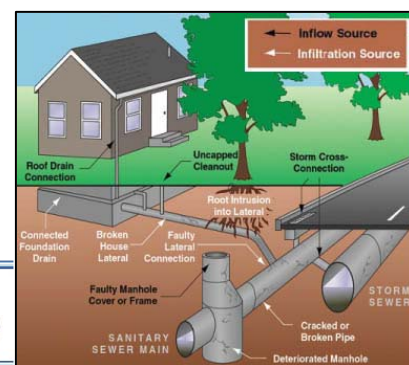
- Ensure certainty of supply
- Meet and exceed Ontario Drinking Water Standards
- Meet or exceed water quality and air quality requirements
- Ensure water and wastewater system reliability.

Assessment of various alternatives showed that enhancing and expanding existing water and wastewater systems would provide the most appropriate solution to effectively accommodate the Region's long term growth. Based on the physical, hydrological and topographical characteristics of the Region, as well as the locations of existing water and wastewater system components, this alternative was carried forward as two separate alternatives: (1) Lake Ontario-based servicing; and, (2) Lake Simcoe-based servicing.

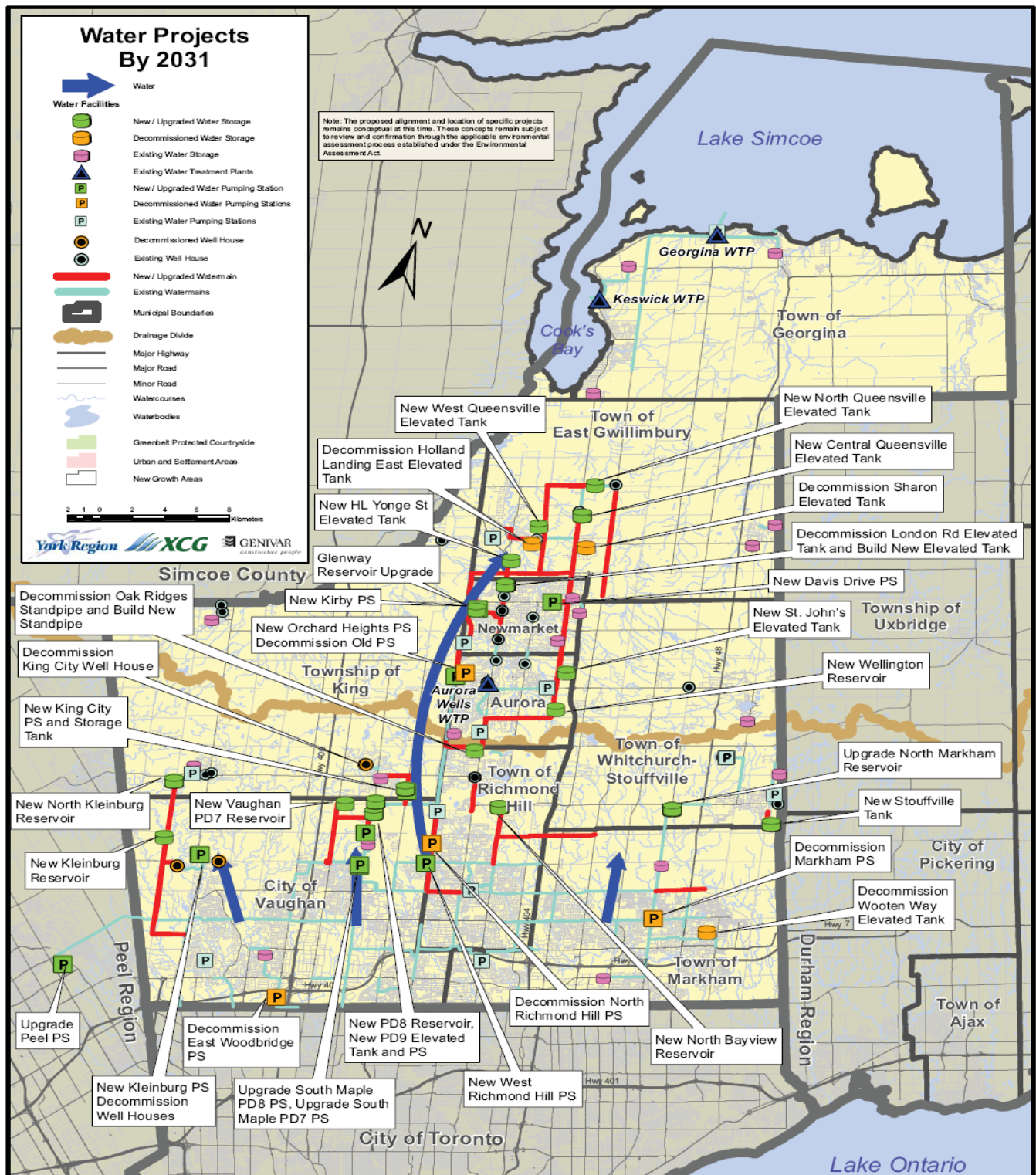
A comparative evaluation of the two alternatives was done and Lake Ontario-based servicing was identified as the preferred alternative because it:

- Best meets the Region's sustainability principles while supporting future growth within the Region
- Protects Lake Simcoe by reducing nutrient discharges
- Protects Lake Ontario through the advanced treatment afforded by the Duffin Creek WPCP in Durham Region and the Lakeview WPCP in Peel Region
- Supports the Great Lakes water balance by returning flow to Lake Ontario
- Supports the major investment in Lake Ontario oriented infrastructure already in place
- Supports water supply system security and operational flexibility.

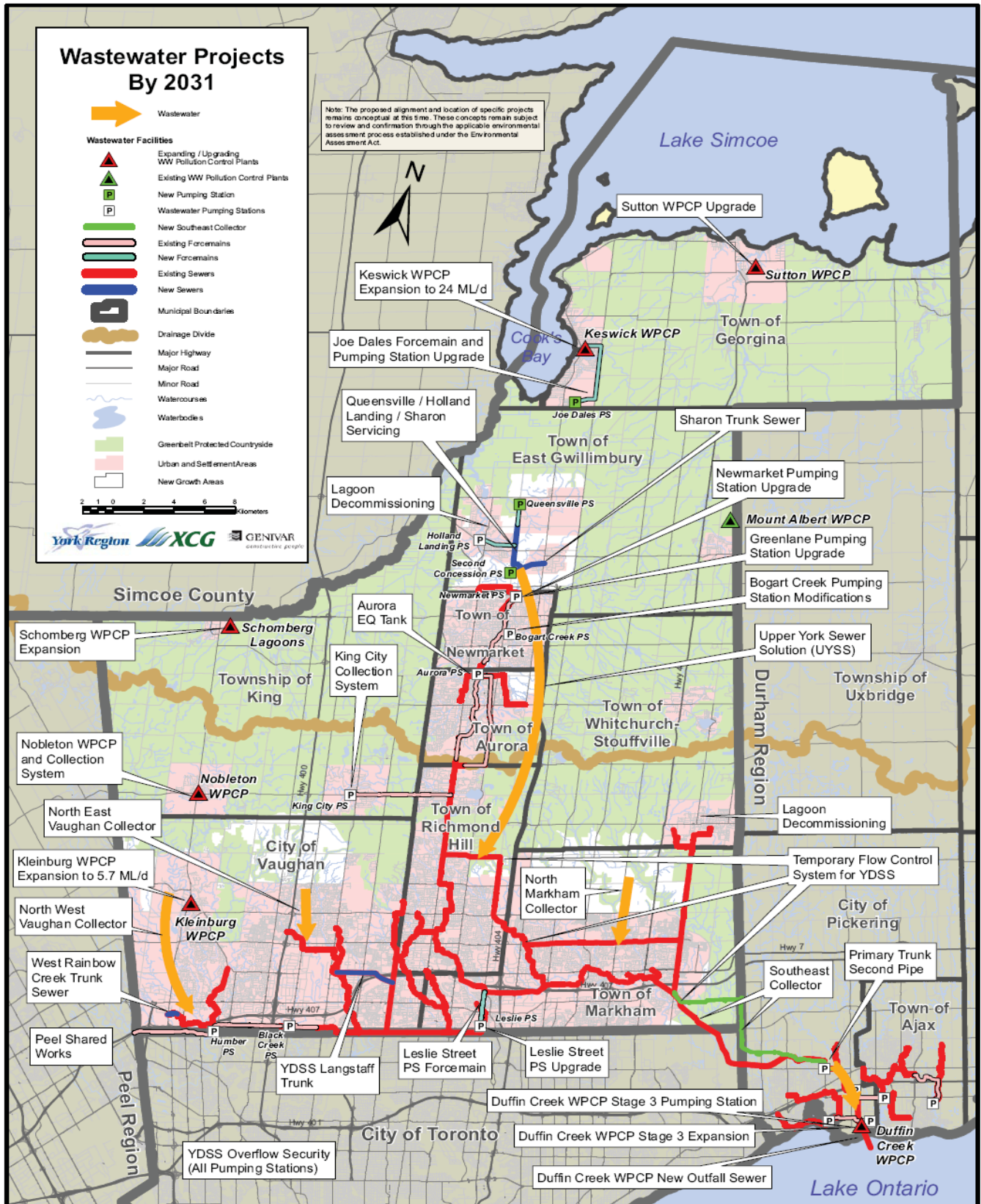
The public strongly supported York Region's preferred alternative, and acknowledged the need to continue with, and enhance, the Region's water efficiency and conservation efforts while at the same time strengthen efforts to reduce and prevent further inflow and infiltration to the wastewater collection system.



Draft 2031 Water Servicing



Draft 2031 Wastewater Servicing



Infrastructure Projects

The preferred alternative will involve the construction of major capital works projects.

Most of the projects were previously identified through past master planning efforts and Class Environmental Assessments. The Master Plan Update served to re-affirm these previously identified projects.

New infrastructure projects identified through the Master Plan Update are needed to service future growth in north Vaughan, north Markham, and East Gwillimbury. The single largest new project will be a Primary trunk sewer that will increase overall security of the wastewater system. Currently, the existing Primary trunk sewer conveys all wastewater generated in the York-Durham Sewage System service area to the Duffin Creek water pollution control plant. The new Primary trunk sewer will be designed to accommodate future growth.

The estimated capital cost of the water and wastewater infrastructure projects comprising the Master Plan Update is expected to reach almost \$4.8 billion¹ in the period to 2031, and \$6.6 billion in the period to 2051. Over 60% of the capital costs are for wastewater projects.

Implementation of the preferred alternative involves:

- 160 km of trunk watermains
- 12 water pumping stations
- 22 water storage facilities
- 48 km of trunk sewers and forcemains
- 3 new wastewater pumping stations
- 8 wastewater treatment plant expansions / upgrades
- 1 new wastewater treatment plant
- 1 new wastewater storage facility

Supportive Policies and Programs

Equally important will be the adoption and implementation of policies and programs that support sustainable servicing, as outlined in the Region's *Water and Wastewater Sustainability Strategy*.

The goal of these programs, which include the Region's highly successful *Water for Tomorrow* program, York's *Sustainable Housing Incentive Program*, and the York Region and Local Municipality Inflow and Infiltration Reduction program, is to effectively manage the demands placed upon water and wastewater services.

In addition, the Region plans to continue efforts to protect its natural heritage, attract residents and businesses, and optimize asset performance – all vital elements important to the sustainability of the Region's water and wastewater systems.

There are additional costs for supportive programs which include the following:



- Continue the *Water for Tomorrow* program, including expansion of the program to new development
- Operate, maintain and manage the water and wastewater systems
- Implement environmental enhancements and improvements to natural heritage features
- Assess system capacity and continue on-going inflow and infiltration reduction programs
- Cover the costs associated with the inter-regional water and wastewater agreements that York Region has with the City of Toronto, Peel Region, and Durham Region.

¹ The capital costs are for the completion of the indicated projects and do not include previous project expenditures. The capital cost estimates are based on a conceptual level of design except in the case of some on-going projects. Cost estimates at the conceptual level of design are normally considered to be accurate to a range of -25% to +40%. Actual construction costs will depend on the site conditions, the design approach used, the construction environment at the time of tendering, and other factors.

Implementation Strategy

York Region developed a priority setting framework to ensure that construction of water and wastewater infrastructure projects and implementation of supportive policies and programs is carried out as effectively and efficiently as possible so that benefits are maximized. The framework served to identify the sequencing of water and wastewater infrastructure projects, as well as initiation and timing for policies and programs.

The conceptual designs for the preferred alternative infrastructure projects will

- *Effectively and efficiently manage energy usage*
- *Limit the production of greenhouse gas emissions*
- *Minimize potential impacts on the Region's natural heritage areas.*

The conceptual designs take into account the benefits that will be achieved from Regional programs, such as Water for Tomorrow.

The priority setting framework considered how individual preferred alternative projects would achieve Regional planning objectives, namely:

- Meet existing water and wastewater servicing demands
- Meet forecasted future needs
- Comply with regulations
- Contribute to Regional strategies and policies
- Affirm the York Region Sustainability Strategy
- Validate the Region's water and wastewater sustainability principles.

The projects, policies, and programs that make up the preferred alternative were assigned one of three levels of priority, depending on anticipated need. In all cases, York Region took a prudent approach and made allowance for infrastructure projects to accommodate new growth, in order to ensure the on-going sustainability of water and wastewater servicing over the long term.

2016 Action Plan

The Preferred Alternative identified through the Water and Wastewater Master Plan Update includes over 70 capital works projects that the Region plans to carry out in the period to 2016. The 2016 Action Plan includes improvements, expansions and priority strengthening of treatment facilities, and water distribution and wastewater collection infrastructure. Many of the projects follow on from projects that were approved as a result of previous master plan updates and individual Class EAs and are currently under construction. The estimated capital project cost of the 2016 Action Plan is \$2.4 billion exclusive of program costs and rehabilitation/replacement costs.

Next Steps

The Water and Wastewater Master Plan Update defines the broad framework for delivery of York Region's long term water and wastewater servicing and is intended to address the initial steps of the Class EA process. The infrastructure projects are still subject to the requirements of the Class EA process.

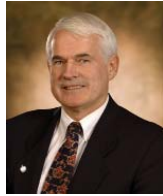
The Master Plan Update covers the period to 2031. But potential future needs to 2051 were also examined. This was done to ensure that recommended actions would align with eventual environmental, infrastructure, and land use development requirements, thus assuring the long term sustainability of York's water and wastewater systems.

York Region recognizes the importance of coordinating the actions identified in the Water and Wastewater Master Plan Update with other Regional initiatives, and is actively working toward seamless integration of this Master Plan Update with the Transportation Master Plan Update and the Region's *Planning for Tomorrow* growth management efforts.





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A Message from York Regional Council

(to be inserted in final version)



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