1
ENVIRONMENTAL SERVICES DEPARTMENT
2009 STATE OF INFRASTRUCTURE REPORT

The Environmental Services Committee recommends:

1. **Receipt of the presentation by Lucas Cugalj, Director, Strategy and Business Planning, Environmental Services; and**

2. **Adoption of the recommendation contained in the following report dated February 23, 2010, from the Commissioner of Environmental Services.**

1. RECOMMENDATION

It is recommended that:

1. The Regional Clerk forward a copy of the Environmental Services Department 2009 State of Infrastructure Report to the Clerks of the nine local municipalities for information.

2. PURPOSE

This report provides background on the Environmental Services Department 2009 State of Infrastructure Report.

3. BACKGROUND

York Region owns and operates over $2 billion worth of water, wastewater and waste management infrastructure assets

Infrastructure assets in York Region are key to the quality of life enjoyed by our citizens. Water, wastewater, and solid waste infrastructure protect public health and the environment as well as help sustain a growing community.

York Region owns and operates over $2 billion worth of water, wastewater and waste management infrastructure assets. York Region staff understand the need to provide high quality municipal infrastructure to ensure the community's growth, economic development, safety and quality of life. The State of Infrastructure Report reflects the Region's commitment to proactively and transparently manage and communicate issues associated with delivery of environmental services. Conestoga Rovers and Associates

were retained to produce a third party State of Infrastructure report on water, wastewater and waste management assets as of 2009. The detailed report is appended as *Attachment 1*.

The Environmental Services Department delivers wholesale supply of drinking water to York Region's nine local area municipalities. The Department is also responsible for the collection and treatment of wastewater. Water and wastewater functions include the operation and maintenance of transmission watermains and major sanitary sewers, pumping stations, water storage facilities, production wells and water/wastewater treatment plants. The Report is representative of infrastructure within York Region and the Duffin Creek Water Pollution Control Plant. It does not include infrastructure in Toronto and Peel where York Region has funded the capital investment for growth and rehabilitation and replacement funding has been included in the water purchase price.

The Department's waste management responsibilities include the planning, financing and delivery of environmentally sound solid waste diversion and disposal services. This includes source separated organics and blue box processing, residual waste pelletization, management of public depots and a community environmental centre, as well as transportation and disposal of municipally-collected waste.

Many cities and municipalities in North America have adapted or are developing Asset Management programs to deal with infrastructure management issues that are a result of the growth phenomena that took place throughout the continent over the last number of decades. The period from 1950 to the 1980's represented significant growth associated with built infrastructure supported by funding at all levels of government. The current period reflects the need to rehabilitate and replace this infrastructure, often without the financial support that existed initially. As referred to in the Report of the Water Strategy Expert Panel in 2005; "Watertight: The case for change in Ontario's water and wastewater sector", there is a forecasted investment of $34 billion required for Ontario's infrastructure over the next 15 years. This is made up of $25 billion for capital renewal, including $11 billion for deferred maintenance and $9 billion for growth. The Ministry of the Environment projects that, unless the rate of capital investment increases sharply from the levels of the recent past, Ontario will face a gap of approximately $18 billion between what is needed versus what is received over the next 15 years.

Managing infrastructure is becoming increasingly challenging presenting difficult decisions to match investment needs with service requirements. A candid assessment of current condition and performance is a useful first step in identifying what's working, as well as options and opportunities for improvement. As conditions change, future assessments will reveal new opportunities and priorities. Assessment results presented in the 2009 State of Infrastructure report can also be a useful resource for focusing improvement efforts and fostering increased understanding of infrastructure issues among stakeholders.

Framework used for the Environmental Services State of Infrastructure is built on three key Dimensions

Reliability, Capacity and Soundness are the three key components of the framework used to assess the state of infrastructure.

Reliability

The focus of this dimension is the overall reliability and quality of service of an asset. Reliability grading provides an assessment of the ability to meet quality and regulatory standards and uninterrupted service.

Capacity

Capacity to meet demand measures the ability to ensure availability of supply consistent with current and future demands. Knowing the capacity performance of assets can provide an early indication of negative impacts on services for customers and potential impacts on the sustainability of the community. Capacity performance provides insight into future impacts of growth including how a service provider should adapt in order to prepare for what will be required in the future.

Soundness

Soundness is a measure of the physical condition of the infrastructure, its age and the maintenance performance. A grade for Soundness provides knowledge related to maintaining and enhancing asset condition and the efficiency and effectiveness of rehabilitation initiatives. Soundness provides an understanding of the remaining service life and functionality of the asset.

Dimension grades are determined based on the infrastructure and how fit it is for its current and anticipated purpose

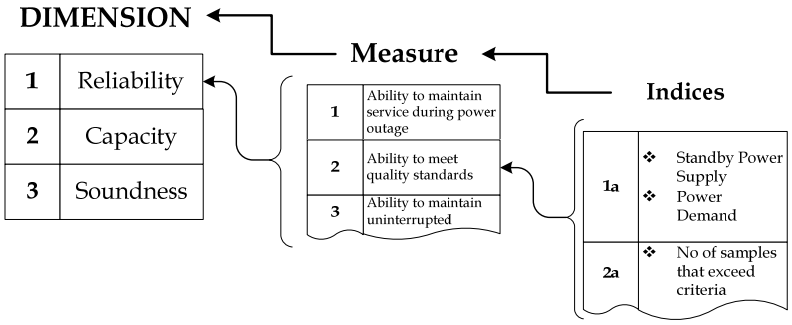
Dimension grades are determined based on the infrastructure and how fit it is for its current and anticipated purpose in terms of condition, regulatory regime and capacity processes. Dimension grades are listed in Figure 1.

Figure 1
Environmental Services Dimension Grades

A	**Excellent - like new**
B	**Good - assets and systems function as designed**
C	**Adequate - most areas meet the standard expected**
D	**Poor - performance is at a level of high risk**
F	**Very poor - fails the lowest standard of condition**

Each Dimension is graded based on all the measures pertaining to the dimension. The general meaning of the overall grade reflects and is a combination of the perspective provided by the dimensions as seen in Figure 2.

Figure 2
Dimension Grading

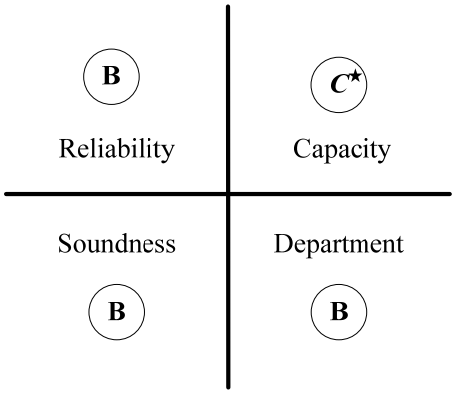


4. ANALYSIS AND OPTIONS

York Region's Environmental Services Department water, wastewater and waste management infrastructure assets are in a good state

Most of York Region's water and wastewater assets were constructed in the 1970s and 80s with many assets being upgraded and expanded in the last several years as a response to the rapid growth in York Region. Some of the water and wastewater linear assets date back to the 1950s having been transferred from local municipalities when the Region was incorporated. The majority of the Waste Management assets were built to serve the needs of the Region in the last decade. Figure 3 provides the Environmental Services Department current grading for Reliability, Capacity and Soundness and the Department average.

Figure 3
Environmental Services Department Dimension Grades



★ Grade improves when Duffin Creek WPCP Stage 3 Expansion is commissioned

In some respect these grades reflect the younger age of the newer asset base, rehabilitation efforts made through the regulatory requirements, and the rigorous planning processes in place that support continued growth in York Region.

York Region has also been developing a Levels of Service Framework and Strategy, a key component to successfully developing an asset management program. The Levels of Service framework outlines the objectives of the Department, measures service delivery success, and acts as a process management tool focused on continuous improvement.

Overall, the state of York Region's environmental services assets is adequate to good. Each service within the Environmental Services Department scored relatively well, and the shortfalls are being addressed through current or projected initiatives which are discussed in the State of Infrastructure Report. Figure 4 provides the overall Environmental Services Department current state of infrastructure for water, wastewater, waste management and the Duffin Creek WPCP. Figure 5 provides individual service grades for reliability, capacity and soundness within each of these services.

Figure 4
Environmental Services Department State of Infrastructure

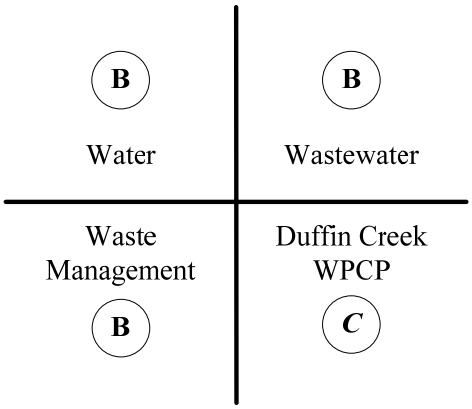
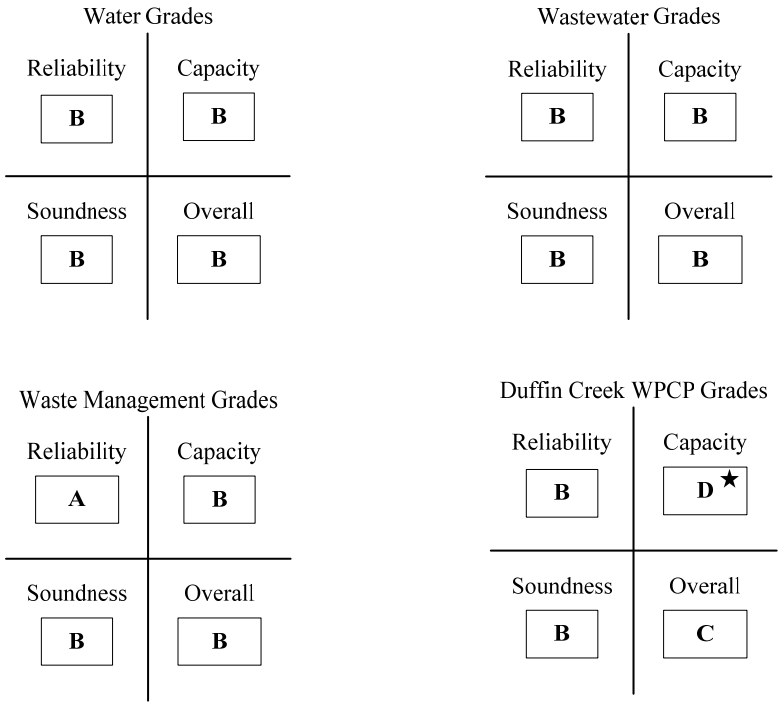


Figure 5
Environmental Services Department State of Infrastructure by Service



★ Will increase to an 'A' when Stage 3 Expansion is commissioned

Water: The Region's ability to maintain safe and secure operations, meeting both regulatory and internal standards and provision of uninterrupted service are key strengths in this service area.

Wastewater: The ability to maintain an effective maintenance program through internal maintenance and rehabilitation programs and the condition of the assets are key strengths in wastewater services.

Waste Management: The ability to provide service capacity for current and future demand and the current condition of the assets are key strengths in this service.

Duffin Creek: Commitment to the expansion of the facility and achievement in maintaining service during significant construction activities and growth within both Regions are key strengths in this area. Opportunities for improvement are centered on specific individual processes and equipment to meet future capacity, and are currently being addressed.

As Environmental Services continues to optimize the Department's performance by developing strategic asset management methods, one focus will be ensuring that these

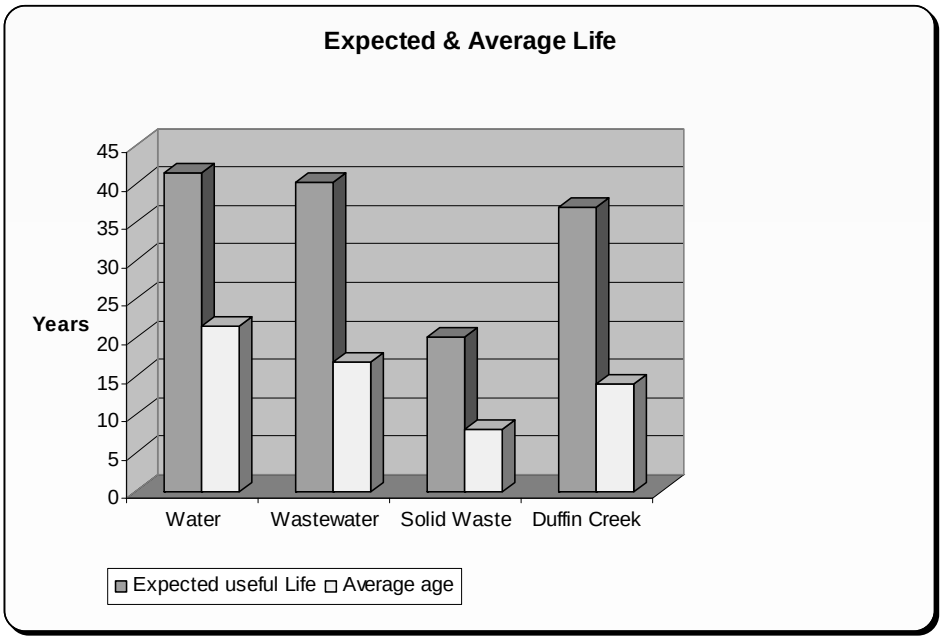
grades are sustainable in the long term by continuing to define and recommend the appropriate funding and resource commitment.

More than half the value of the environmental services assets has reached the midway point of the expected useful life

The expected useful life of these assets varies considerably from several years to several decades and reflects the varied nature of the assets themselves. The useful life is highly dependent on the lifecycle asset category. For example instrumentation and control assets are expected to last in the 15 year range, process mechanical assets in the 30 year range and structural assets in the 60 year range.

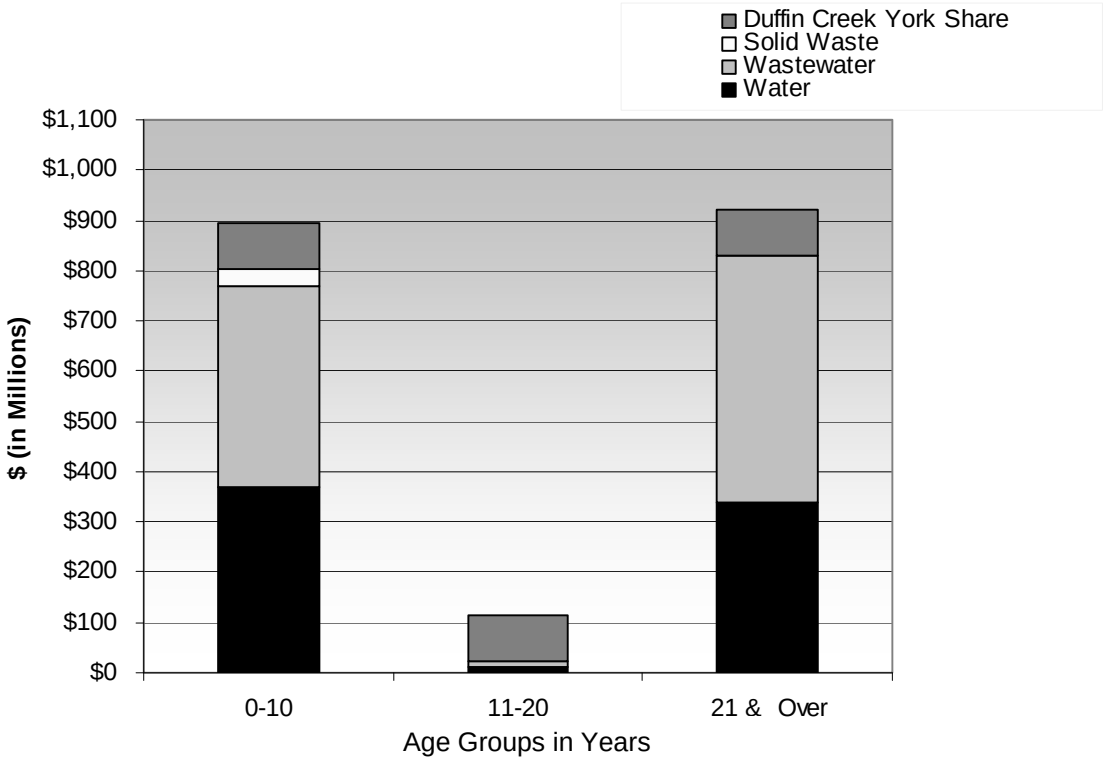
Figure 6 compares the average age with the average expected useful life of the environmental services assets. The average age essentially represents how old our assets are and the expected life represents how long we expect them to last notwithstanding any unforeseen issues. As can be seen in Figure 6 the average age of our assets is less than the expected useful life for all our asset categories.

Figure 6
Expected Life and Average Age



Aging infrastructure and the middle aged nature of York's assets present challenges for the provision of continued reliable service and represent a financial demand to maintain and replace assets. As infrastructure ages the financial demand to maintain the same level of reliable service increases. Figure 7 presents the current replacement value of infrastructure and the respective age.

Figure 7
Asset Value by Age Group



More than half the value of the environmental services assets has reached the midway point of their expected useful life which demonstrates the significance of future expenditures needed for asset rehabilitation and replacement.

York Region has been developing a more focused approach to asset management since 2007 to strategically manage infrastructure

To ensure that future capital investments for rehabilitation and replacement are made most effectively, a strategic 10-year Infrastructure Improvement Plan (IIP) has been developed by Environmental Services. The plan was developed to identify deficiencies, prioritize infrastructure projects, and determine appropriate resource levels. By developing these plans, rate models can be informed with future requirements and reserves can continue to be built to match forecasted needs. The IIP is part of a broader Infrastructure Management Program within Environmental Services. The Infrastructure Management Program continues to develop and implement service levels required of infrastructure assets to meet customer expectations as well as monitor asset performance to support infrastructure planning.

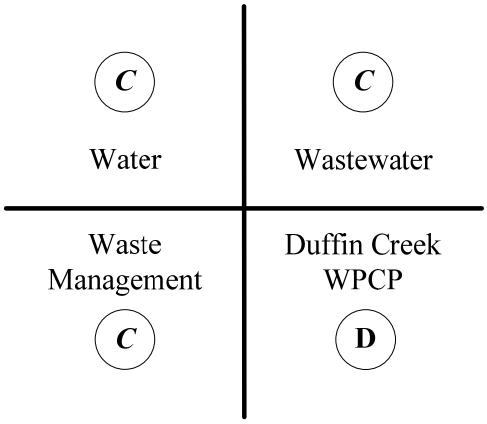
5. FINANCIAL IMPLICATIONS

Current State of Infrastructure reveals a lower grade based on the financial dimension

The financial dimension measures the ability to meet the financial needs of rehabilitation and replacement over both short and long term periods. This information can provide York Region with the necessary information to understand whether reserves are sufficient to maintain current levels of service. The financial grade can be used to help establish predictable rates consistent with community expectations and values while recognizing economic risks.

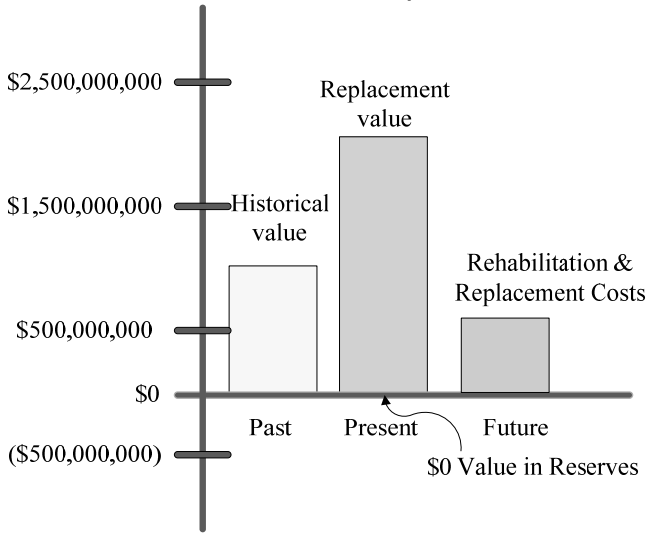
The current grades of the Region's Environmental Services infrastructure as presented in this report reflect the younger age of the newer asset base, rehabilitation efforts made through requirements of the *Safe Drinking Water Act*, and the rigorous planning processes in place that support the approved growth and infrastructure expansion in York Region. A downside to the current State of Infrastructure is the lower grade for the financial dimension. Figure 8 shows the current Financial Dimension grade for Environmental Services.

Figure 8
Environmental Services Financial Management



While short term budget planning (10-year horizon) ranks strongly, there are opportunities to improve the position of the long term financial reserves as current reserve balances need to increase over time to meet forecasted requirements. Figure 9 shows the current replacement value of infrastructure and rehabilitation and replacement costs.

Figure 9
Environmental Services Replacement Value



In determining funding sufficiency, consideration must be made for the timing of the capital needs, the annual amount being provided and the maintenance of a reserve. Water and wastewater rates currently include contributions for replacement in the amount of $21 million per year which appear to provide sufficient funding within the thirty year period. Solid waste infrastructure replacement needs have been included within the overall asset replacement funding that has been budgeted over the past four years.

Based on the 2009 Water and Wastewater Master Plan, over $1.3 Billion is estimated for capital costs related to existing infrastructure management out to 2051, all of which will be funded by the Capital Replacement Reserve. The 2009 State of Infrastructure report suggests that approximately $500 Million will be incurred by 2038 for existing infrastructure. Costs in the period from 2038 to 2051 more than double due to additional assets coming to end of life and the increase in assets beyond 2009 related to significant expansion of the Region's water and wastewater systems as well as the Duffin Creek Water Pollution Control Plant.

The previous rate study undertaken by the Region assessed a long-term horizon to 2056. Therefore, even when considering the 2009 to 2051 time horizon, it appears that the existing rate strategy will meet the longer term requirements although there may be periods when short term borrowing may be required to deal with higher annual expenditures than normal. This rate study will be updated over the next twelve months to ensure that all new infrastructure identified in the master plans are reflected in rate projections.

The existing rate strategy is designed to ensure the necessary funding is in place to meet our operating costs and long-term rehabilitation and replacement needs. The strategy also includes a phase-in approach to rate increases, particularly in wastewater services. As a

result of phasing rate increases, the system is currently using all available revenue, including reserves to meet operating and capital obligations. The situation will improve as the rates reach their full value and proportionately more of the rate is focused on contribution to reserves. Staff will be reviewing rates to ensure the existing strategy is meeting required funding levels and reporting to Council when establishing the updated 2011 – 2014 rates.

Water: The effective short term annual budget program and the integration with identified rehabilitation needs are key strengths. The lower grade can be addressed by improving the financial strength of the organization through increased annual investments into financial reserves over time. At the end of 2010 water reserve balances are forecasted at $24 million.

In August of 2007, the Ministry of the Environment (MOE) filed O. Reg. 453/07, the Financial Plans Regulation under the *Safe Drinking Water Act*. This regulation sets out requirements for financial plans that all municipal drinking water systems will be required to prepare as early as July 2010. One of the requirements of the regulation is full-cost accounting to encourage better long-term planning for capital renewal and replacement. York Region is currently preparing this financial plan and is well-positioned to respond to this new standard.

Wastewater: The effective short term annual budget program and the integration with identified rehabilitation needs are key strengths. The identified need for improvement within this dimension is the same as in water services; to improve the financial strength of the organization by increasing the annual investments into financial reserves. At the end of 2010 wastewater reserve balances are forecasted at negative $57 million.

Waste Management: Strengths in this dimension are the limited short term annual budget demands for the waste management facilities and the near term service agreements with private vendors. Increasing annual investment into financial reserves is a key area for improvement along with improving the knowledge of future rehabilitation and replacement funding requirements. At the end of 2010 waste management reserve balances are forecasted at $10 million.

Duffin Creek: Strengths in this dimension are the ability to meet funding requirements for the current year. In this dimension there is a need to improve the financial strength of the organization by increasing the annual investments for both the 10 year budget and the long term financial reserves. A separate report on Duffin Creek will be brought forward in April 2010 that recommends a $200 million expenditure in the 10 year capital plan for purposes including asset upgrades, rehabilitation and replacement.

6. LOCAL MUNICIPAL IMPACT

Each local municipality is required to establish sustainable asset management practices and report on the State of Infrastructure where applicable. With the passing of Bill 175, the *Sustainable Water and Sewage Systems Act* to ensure clean and safe drinking water for Ontario residents, and the potential for future regulations, local municipalities will be required to assess the cost of providing water and sewage services and to recover the amount of money needed to operate, maintain, and replace the system.

The Ministry of the Environment, in a commitment to sustainable drinking water systems, has made a regulation (O.Reg. 453/07) under the *Safe Drinking Water Act*, 2002 that prescribes requirements for Financial Plans to be prepared as part of the Municipal Drinking Water License Program. In order to comply with pending future financial regulations and as importantly, provide long-term sustainable water and wastewater system management services, municipalities will require an assessment of how costs will be recovered to support on-going programs and required infrastructure.

York Region staff will continue to work with the local municipalities to support sustainable asset management practices through programs such as Water for Tomorrow and the Inflow and Infiltration Program. With continued coordination and the development of business processes, best practices, technology and business resources, York Region and the local municipalities will continue to ensure sustainable environmental services.

7. CONCLUSION

York Region has been actively adopting sustainable asset management practices for the Region's water, wastewater, and waste management services. Asset Management presents an opportunity and the means of proactive service management. It is an approach to business management where the goal is to provide a transparent, consistent framework for decision making that balances services, risk and costs. The challenge to provide and maintain a service can be met through management of infrastructure assets in a comprehensive fashion.

York Region has the opportunity to continue developing asset management programs at a time when the infrastructure is still relatively young. Overall the reliability, capacity and soundness of the Water, Wastewater and Solid Waste Infrastructure appears in a fairly good state with assets and systems functioning as designed. York Region staff understands the need to provide high quality municipal infrastructure to ensure the community's growth, economic development, safety and quality of life. The State of Infrastructure Report reflects the commitment to proactively and transparently manage and communicate issues for the delivery of environmental services.

While short term budget planning (10-year horizon) supports the required commitment for asset management, there are opportunities to improve long term financial reserves as they are currently significantly less than forecast requirements. A water and wastewater rate study review has been initiated by the Environmental Services Department and will consider these requirements in the analysis.

For more information on this report, please contact Lucas Cugalj, Director of Strategy and Business Planning at (905) 830-4444 Ext. 5041.

The Senior Management Group has reviewed this report.

(The attachment referred to in this clause is attached to this report.)

ENVIRONMENTAL SERVICES
2009 STATE OF INFRASTRUCTURE REPORT

Presentation to
Environmental Services Committee

Lucas Cugalj, Director, Strategy and Business Planning

April 14, 2010

Agenda

- Overview of Infrastructure Assets
- Framework
- 2009 State of Infrastructure Assets
- Recommendation
- Moving Forward

Overview of Infrastructure Assets

- York Region owns and operates over $2 billion of water, wastewater and waste management infrastructure assets
- 10 year capital plan adds another $2.5 billion of assets

Over $4.5 billion asset value by 2020

York Region

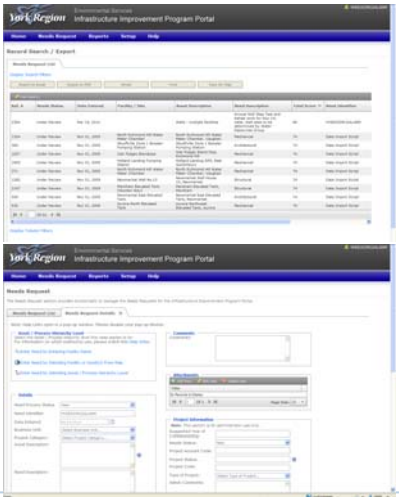
Proactive Infrastructure Management Programs

Current Programs

- Infrastructure Condition Assessment/Rating
- Infrastructure Improvement Program (IIP)
- Infrastructure Degradation Program

Programs in Development

- Predictive Lifecycle Analysis
- Infrastructure Rehabilitation & Replacement Planning



York Region

Framework for developing current state

Environmental Services Dimensions

1 Reliability The focus of this dimension is the overall reliability and quality of service of an asset.	***2 Capacity*** Capacity to meet demand is the ability to ensure supply consistent with current and future demands
3 Soundness Soundness considers physical condition of the infrastructure, its age and the maintenance performance	***Department*** The Department grade is the average of the three dimensions

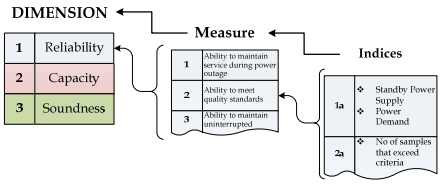
Three Key Dimensions: Reliability, Capacity and Soundness

Framework (cont'd)

Dimension Grades

A	Excellent - like new
B	Good - assets and systems function as designed
C	Adequate - most areas meet the standard expected
D	Poor - performance is at a level of high risk
F	Very poor - fails the lowest standard of condition

Grading System



Financial Grading Treated Separately

Framework: Example of grades

Grade: A

Grade: B

Grade: C

Grade: D

Grade: F (not a York Region Sewer)

York Region

2009 Current State

B 1 Reliability	C★ 2 Capacity
3 Soundness B	Department B

★ Grade improves when Duffin Creek WPCP Stage 3 expansion is commissioned

Positive Results

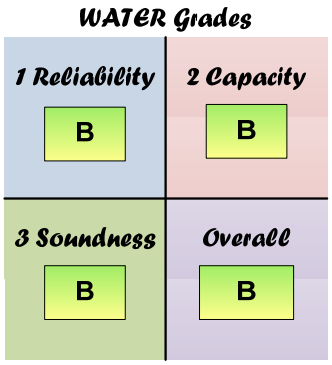
- Ability to maintain service
- Ability to maintain assets
- Ability to meet current demand

Opportunity for Improvement

- Ability to maintain service during power outage (water)

Water, Wastewater and Waste Management Assets are in a good state

2009 Current State (cont'd)



Positive Results

- Ability to maintain safe and secure operations
- Ability to meet quality standards
- Ability to maintain current assets

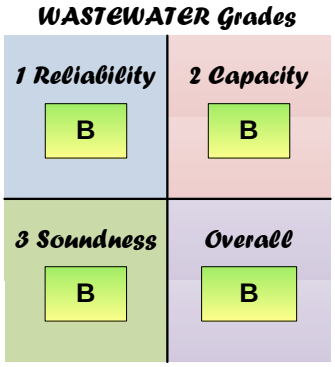
Opportunity for Improvement

- Ability to maintain service during power outage

No water facility received a grading lower than 'B'

York Region

2009 Current State (cont'd)



Positive Results

- Ability to maintain safe and secure operations
- Ability to maintain service during power outage
- Ability to maintain current assets

Opportunity for Improvement

- Ability to meet internal standards

Duffin Creek is graded separately and not included in these results

York Region

2009 Current State (cont'd)

Waste Management Grades

1 Reliability	2 Capacity
A	B
3 Soundness	**Overall**
B	B

Positive Results

- Ability to maintain safe and secure operations
- Ability to meet current demand
- Ability to maintain current assets
- Ability to provide service during power outages

92% of scores by facility were 'A' or 'B'

York Region

2009 Current State (cont'd)

Duffin Creek WPCP Grades

1 Reliability	2 Capacity
B	D★
3 Soundness	**Overall**
B	C

★ Will increase to an 'A' when Stage 3 Expansion is commissioned

Positive Results

- Ability to maintain safe and secure operations
- Ability to maintain service during power outage
- Ability to meet quality standards

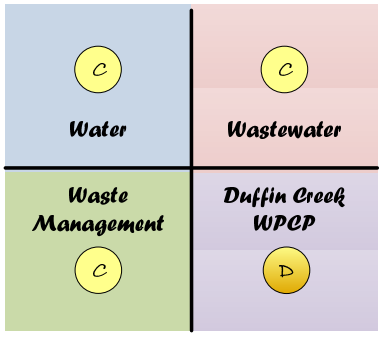
Opportunity for Improvement

- Ability to meet demand

Overall score improves upon commissioning of Stage 3 expansion

York Region

2009 Financial Grading



Positive Results

- Rehabilitation and Replacement Projects approved in 10 Year Capital Plan
- Annual budget commitments to capital replacement reserve

Opportunity for Improvement

- Ability to fund rehabilitation and replacement projects from the capital replacement reserve

Updated Water and Wastewater Master Plan estimated $1.3 Billion for Rehabilitation and Replacement costs to 2051

Recommendation

- The Regional Clerk forward a copy of the Environmental Services Department 2009 State of Infrastructure Report to the Clerks of the nine local municipalities for information

The State of Infrastructure Report reflects the commitment to proactively and transparently manage service delivery

Moving Forward

- Inflow & Infiltration Taskforce
- Level of Service and Performance Measurement Assessment
- Data Management Strategy
- Drinking Water Quality Management System Financial Plan
- Rate Study Review

Council's Support of Sustainable Asset Management Practices Ensures Good Return on Investment for Regional Infrastructure

York Region

Thank you!

York Region