



# ASSET MANAGEMENT PLAN 2013

Prepared by:

**CH2MHILL**®



# Asset Management Plan and Strategy 2013



December 4, 2013

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# Acknowledgements

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The development of this document was a significant corporate wide initiative and involved the various committees and committee members identified below.

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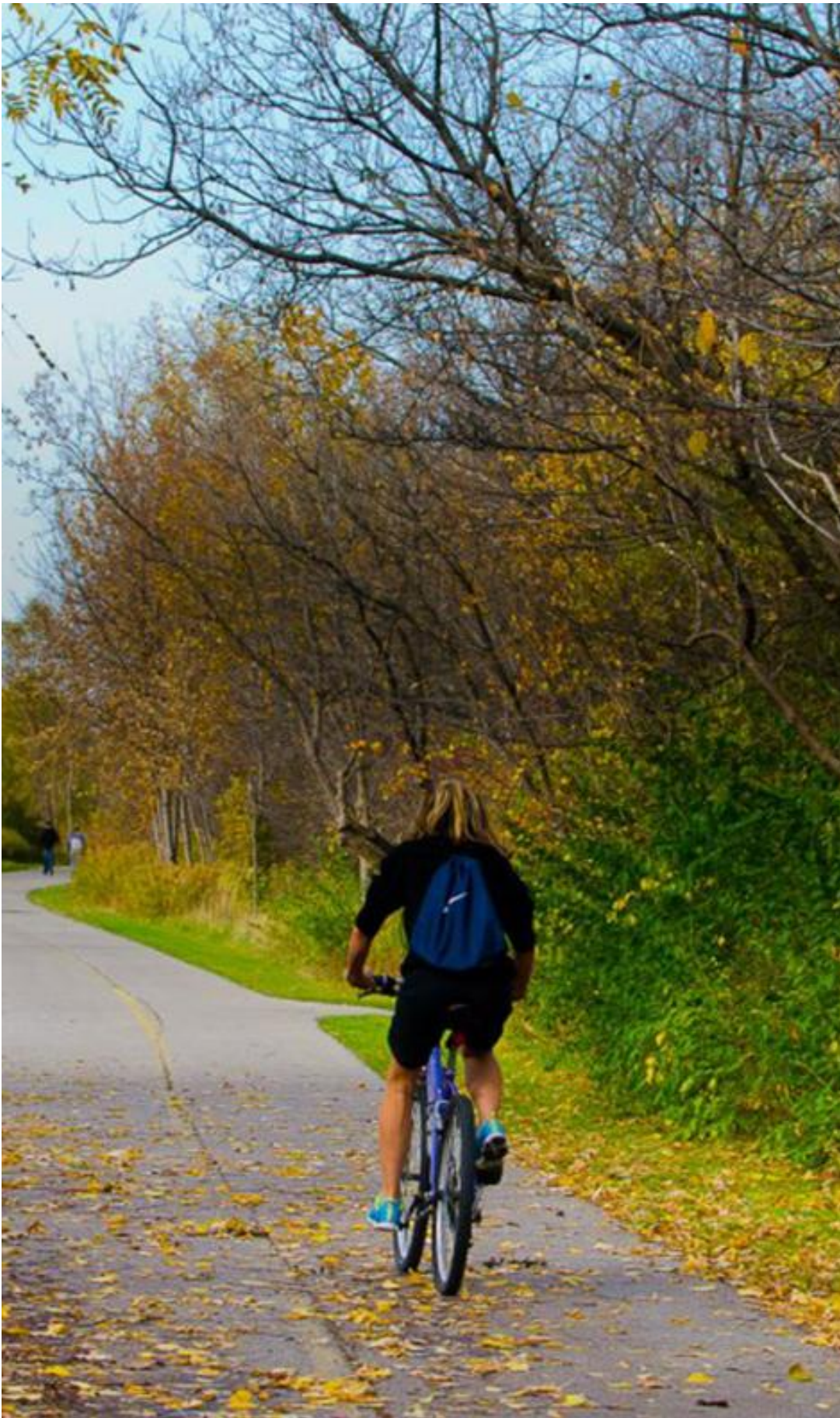
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**Section 0  
Acronyms,  
Abbreviations &  
Definitions**

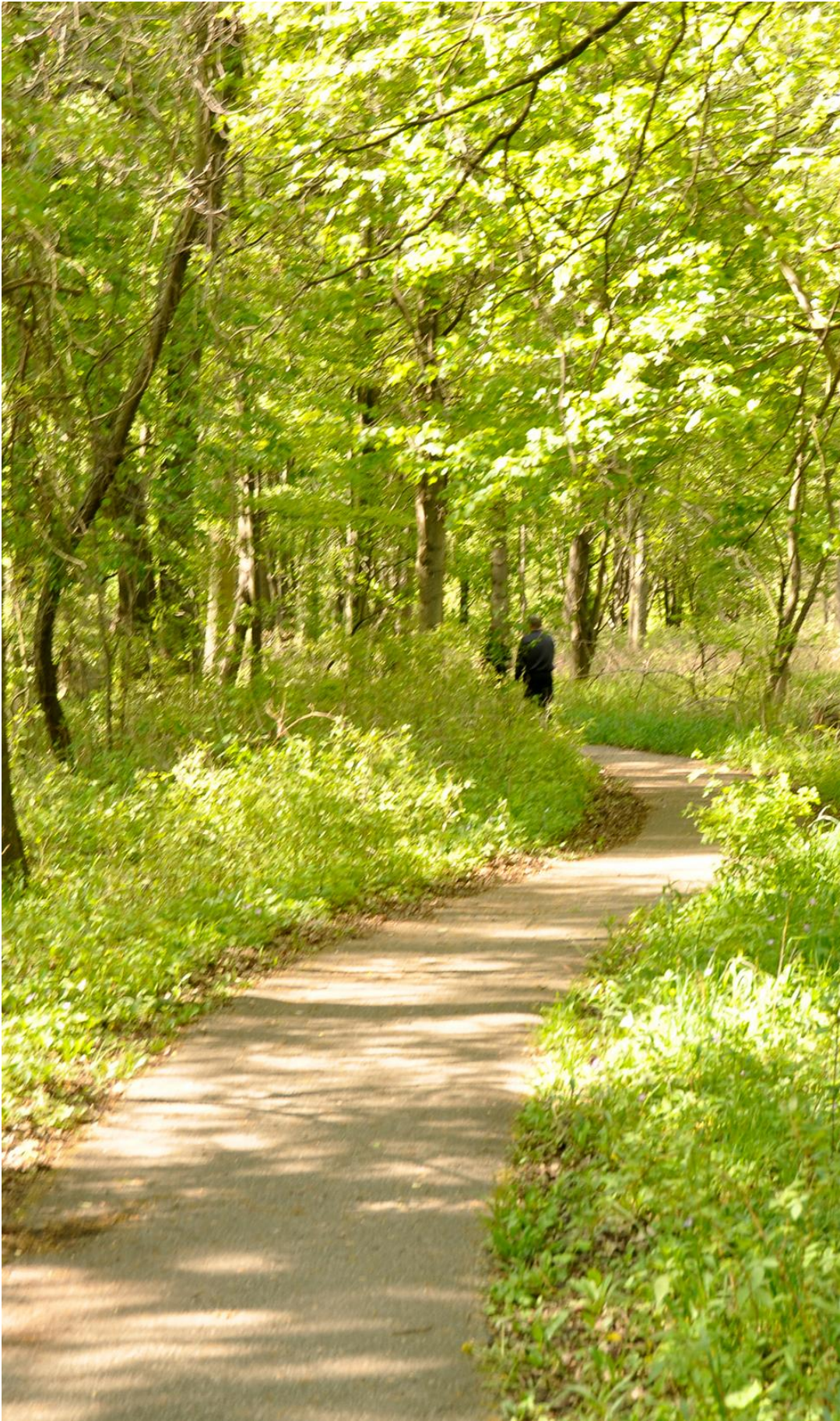


## Acronyms and Abbreviations

1. **AM** – Asset Management
2. **AMP** – Asset Management Plan
3. **Amortization** – The accounting process of allocating the cost less the residual value of a tangible capital asset over its useful life.
4. **Betterment** – A cost incurred to enhance the service potential of a tangible capital asset. Such expenditures would be added to the tangible capital asset's cost.
5. **BAF** – Biological Aerated Filter
6. **CBA** – Cost-Benefit Analysis
7. **CCA** – Canadian Construction Association
8. **CCTV (Closed Circuit Television)** – Used to monitor and assess corporate infrastructure
9. **CMMS** – Computerized Maintenance Management System
10. **CMU** – Concrete Masonry Units
11. **CNAM** – Canadian Network of Asset Managers
12. **Cost of TCA** – The gross amount of consideration given up to acquire, construct, develop or better a tangible capital asset, and includes all costs attributable to the asset's acquisition, construction, development or betterment, including installing the asset at the location and in the condition necessary for its intended use.
13. **CRIP** – Central Riverfront Implementation Plan
14. **CSAP** – Corporate Strategic Action Plan
15. **CSCE** – Canadian Society for Civil Engineering
16. **Design Life** – The period of time during which the item is expected, by its designers, to work within its specified parameters.
17. **Disposal** – The processes involved in the removal of the TCA from use and from the TCA sub-ledger subsequent to: **donation, sale, abandonment, or destruction.**
18. **ESR** - Environmental Study Report
19. **Fair Value** – The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction who are under no compulsion to act.
20. **FCM** – Federation of Canadians Municipalities
21. **FIR (Financial Information Return)** - A standard set of year-end reports which capture financial and statistical information for each municipality in the Province.
22. **Historical Cost** – The original cost to acquire an asset and/or make it operational. Includes all costs associated with the purchase (e.g. delivery, set-up).
23. **IT** – Information Technology
24. **KPI** – Key performance indicator
25. **Life Cycle Costing** – A method of economic analysis to estimate the total cost of ownership of an asset, over its expected life.
26. **Linear Assets** – Assets constructed or arranged in a continuous and connected network. Roads and sewers are examples of linear assets.
27. **LOS** – Levels of Service
28. **LRWRP** – Lou Romano Water Reclamation Plant

29. **MCA (Multi Criteria Analysis)** – A structured approach used to determine overall preferences among alternative options, where the options accomplish several objectives.
30. **MOI** – Ministry of Infrastructure
31. **NBV (Net Book Value)** – The remaining value of an asset as defined by the assets original cost (historical cost) minus accumulated amortization
32. **O & M** – Operations and Maintenance
33. **OMBI** – Ontario Municipal Benchmarking Initiative
34. **OSIM** – Ontario Structure Inspection Manual
35. **PACP** – Pipeline Assessment & Certification Program
36. **Pooled Assets** – Assets that are homogenous in terms of their physical characteristics, use and expected useful life. Pooled assets are amortized using a composite amortization rate based on the average useful life of the different assets in a group.
37. **PSAB** – Public Sector Accounting Board
38. **Replacement Cost** – The cost to replace an asset today.
39. **Replacement Cost End of Life (future replacement cost)** – Estimated cost of replacing an asset at the end of its useful life based on an estimated rate of inflation.
40. **ROW** – Right-of-Way
41. **SCADA** – Supervisory control and data acquisition system
42. **Straight-line Amortization** – Allocates the cost less estimated residual value of a capital asset equally over each year of its estimated useful life.
43. **SUV** – Sport Utility Vehicle
44. **Tangible Capital Assets (TCA)** – Non-financial assets that are held for use in the production or supply of goods and services, used for administrative purposes or for the development, construction, maintenance or repair of other tangible capital assets, have useful economic lives extending beyond an accounting period, and are to be used on a continuing basis
45. **UPS** – Uninterruptible power supply
46. **Useful Life** – The period over which the municipality expects to use a tangible capital asset.
47. **WECHC** – Windsor Essex Community Housing Corporation
48. **Write-down** – A reduction in the cost of a tangible capital asset to reflect the decline in the asset's value due to a permanent impairment.
49. **Work in Progress (WIP)** – The accumulation of costs for Tangible Capital Assets that are in construction or development in progress but are not yet in use or the capital project is still open to accumulate costs.
50. **WUC** – Windsor Utilities Commission





Section 1  
Executive Summary





# Executive Summary

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This asset management plan will serve as a strategic, tactical, and financial document ensuring that the management of the City's municipal infrastructure follows sound asset management practices and principles, while optimizing available resources and meeting levels of service at an acceptable level of risk.

Once adopted, this plan will become the City of Windsor's plan for the effective and efficient management of its assets. It has been developed to, as a minimum, meet the Ontario Ministry of Infrastructure requirements as set down in the ***Building Together: Guide for Municipal Asset Management Plans*** document. This plan will remain current until replaced by an updated plan.

## 1.1 Section 2—Corporate Asset Management Plan

This Asset Management Plan meets the requirements as outlined within the Ontario ***Building Together: Guide for Municipal Asset Management Plans***.

### 1.1.1 Introduction

#### 1.1.1.1 Importance of Infrastructure—Supporting the City of Windsor's Goals

Asset Management directly supports a number of the City's Strategic goals through the maintenance of existing infrastructure along with the creation of new infrastructure as detailed in the City's Official Plan.

These goals, as detailed in the Official Plan, are as follows:

- Safe, sustainable, effective and efficient infrastructure.
- Optimal use of existing infrastructure.
- An accessible, affordable and available transportation system.
- An environment in which all modes of transportation can play a balanced role.
- The provision of infrastructure in a coordinated, efficient and cost effective manner.
- Integration of planning for infrastructure with the planning for growth.
- Protection of natural features. For the development and site alteration on lands located within or adjacent to the significant habitat of endangered species or threatened species, or Provincially Significant Wetlands, or natural heritage features, these activities should avoid natural heritage features and areas, and if avoidance is not possible, minimize the impact to natural heritage features.

## 1.2 Section 3—State of Local Infrastructure

The assets covered by this plan are valued at replacement cost of \$5,220,895,361 (2012 data). The road, structures, storm water and wastewater assets make up approximately 80 % of the assets covered by this plan (by value) with a total 2012 replacement cost estimated at \$4.4 Billion.

Given the timelines to complete the AMP (6 months), availability of necessary data and resources we were able to expand the scope of our work to beyond the Ministry's requirements; additional asset classes covered by the plan include facilities, fleet, parks and information technology assets. Other asset classes (detailed below) were not able to be included in this initial plan given the challenging timelines. It is our intention to bring these other assets into future iterations of the plan.

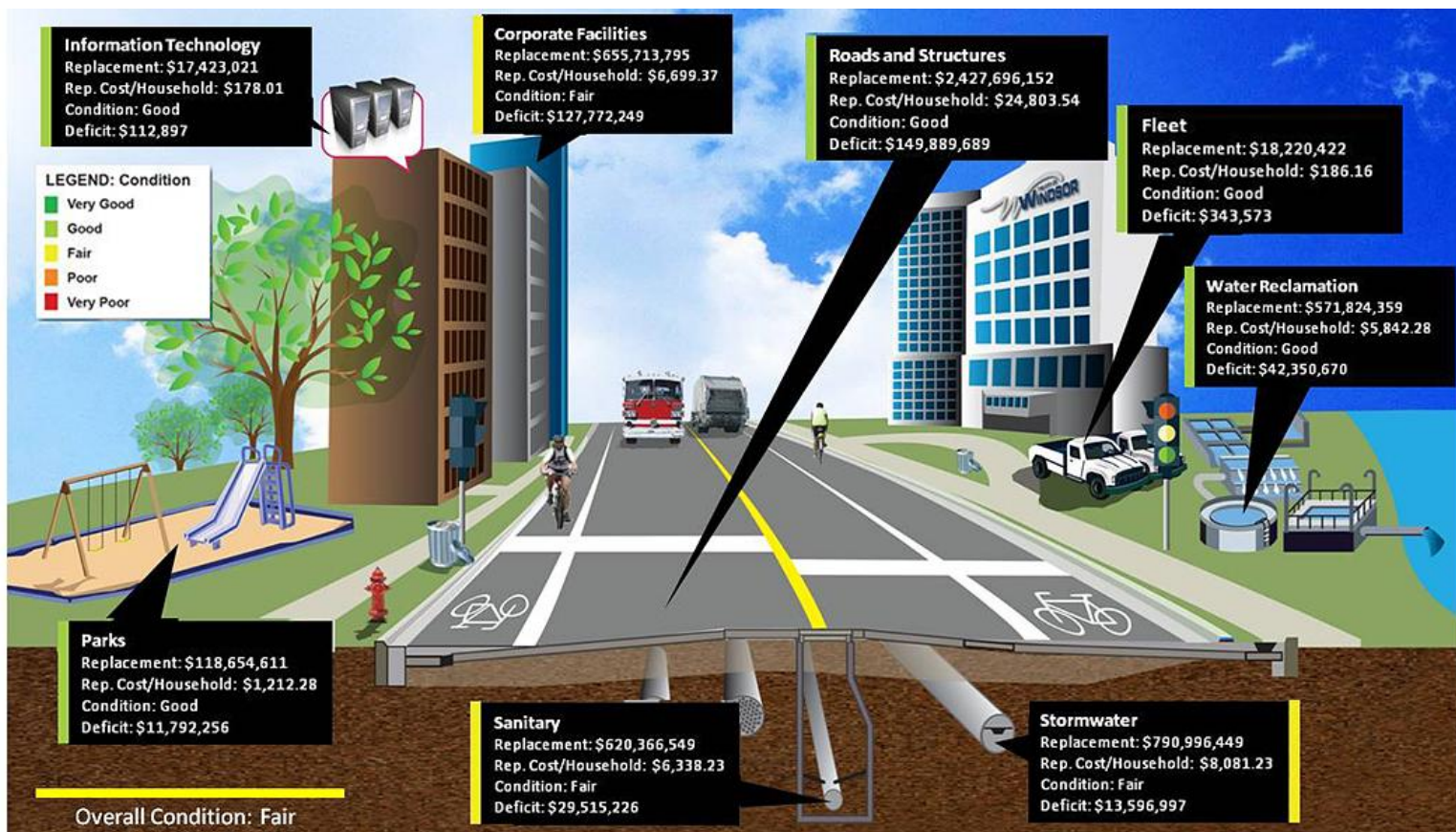
Assets not included in the City's inaugural plan primarily consist of:

- Art and Heritage properties

- Horticulture and forestry
  - Land
  - Fire – heavy equipment
  - Street lights, metered parking lots, pay stations
  - Parks amenities such as benches, lighting, garbage cans, trails, sidewalks, planters and irrigation

All of the City's agencies, boards and commission are not included in the Corporate AMP. They are managed independently and the City does not make decisions on the assets they manage. The City has a significant amount of work ahead to develop and implement asset management practices, policies and procedures for the \$5.2 Billion assets the City is outlining in this AMP. As these practices, policies and procedures are put in place for the City assets covered in this AMP, the ability to introduce those practices to the agencies, boards and commissions will be pursued in the future with the respective boards and agencies.

**FIGURE 1-1—OVERALL SUMMARY OF CONDITION, REPLACEMENT VALUE AND ESTIMATED INFRASTRUCTURE GAP FOR THE CITY OF WINDSOR**

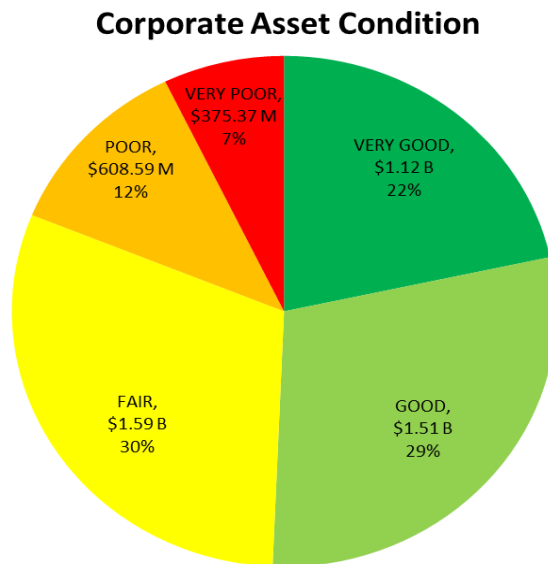


Overall the condition of the City of Windsor's Assets is **Fair**, which is consistent with what is being reported and observed at municipalities across Ontario and Canada. It should be noted that 50 % of the City of Windsor asset inventory is in a **Good to Very Good condition**. However this information must be taken cautiously given the number of assets that are in the final 20% of their expected lifecycle. Sewers and roads are particularly prone to age-based deterioration and could significantly alter the overall rating in subsequent years. Given that wastewater and storm water collections systems comprise

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over 25% of the City's assets (by value) and to date are primarily subjectively rated and monitored, this is an area that will be the focus of future condition assessment programs.

**FIGURE 1-2—CITY OF WINDSOR OVERALL ASSET CONDITION**



The process used by the National Infrastructure Report card for overall condition rating has been utilized by the City for their condition calculations as well. The calculation is % of Very Poor x .2, Poor x .4, Fair x .6, Good x .8 and Very Good x 1.0. The sum of these results in an overall rating based on greater than or equal to 80%= Very Good, 70 – 80% =Good, 60 – 70= Fair, 50 – 60= Poor and below 50= Very Poor. The City of Windsor's overall calculation is 69.4% and as such results in an overall Fair condition rating

### **1.3 Section 4—Level of Service**

In developing the City's LOS Measures we have taken into account a broad range of factors including the following:

**Strategic Goals**

- Legislative and Regulatory requirements along with City Policies
- Current state of assets
- Community Expectations
- Affordability

SYMBOL	TREND	DESCRIPTION
	Negative Upward Trend	An upward trend represents a negative outcome for the City of Windsor e.g. higher risk to service delivery
	Positive Upward Trend	An upward trend represents a positive outcome for the City of Windsor e.g. improving LOS
	Negative Downward Trend	A downward trend represents a negative outcome for the City of Windsor e.g. declining LOS
	Positive Downward Trend	A downward trend for this category to service delivery represents a positive outcome for the City of Windsor e.g. lower risk to service delivery
	Consistent/ Stable Trend	No anticipated changes noted at this time

**FIGURE 1-3—OVERALL SUMMARY OF SERVICE AREA CURRENT AND PROJECTED LOS & LEGEND**

Service Area	Condition	Service Levels	Risk to Service Delivery	Projected Service Levels	Data Confidence
Transportation					RELIABILITY ACCURACY 
Environmental Protection - Water Reclamation					RELIABILITY ACCURACY 
Environmental Protection - Sanitary & Storm Sewers					RELIABILITY ACCURACY 
Corporate Fleet					RELIABILITY ACCURACY 
Corporate Facilities					RELIABILITY ACCURACY 
Information Technology (IT)					RELIABILITY ACCURACY 
Parks and Natural Areas					RELIABILITY ACCURACY 

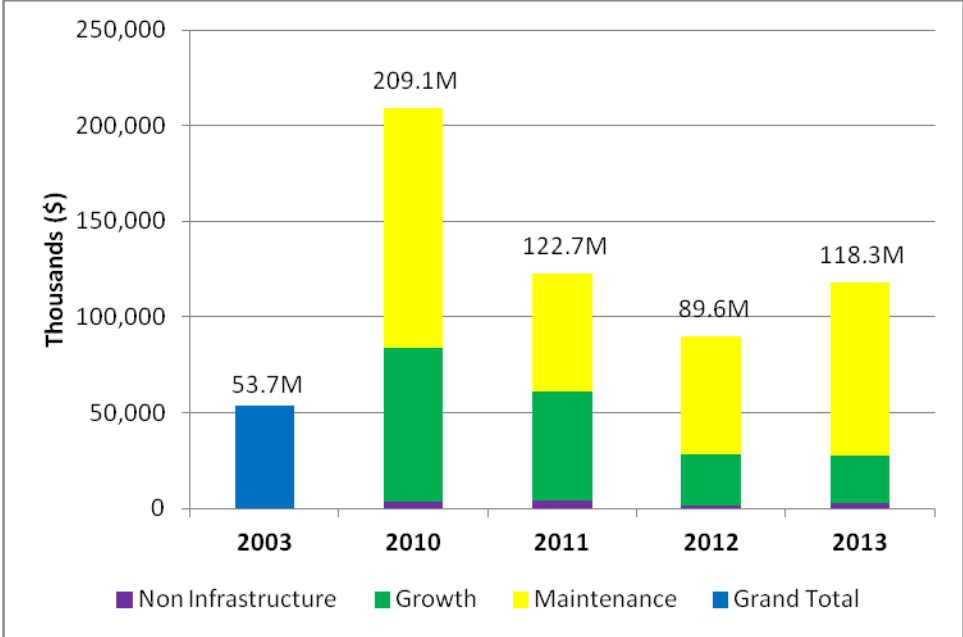
# 1.4 Section 5—Asset Management Strategy

The City’s approach to managing assets includes having in place clearly defined Levels of Service, obtaining a better understanding of the condition of the asset base along with the identification of the optimal life cycle interventions based on the lowest whole of life cost. Prioritization techniques, including risk, are also utilized as an approach to determining the priority of projects.

# 1.5 Section 6—Financing Strategy

The City of Windsor has increased the funding capital assets dramatically over the past decade as evidenced in Figure 1-4 below. The average annual capital budget in the ten year period of 2004-2013 averaged approximately \$114 million annually compared to the 2003 capital budget of approximately \$54 million.

FIGURE 1-4—APPROVED CAPITAL BUDGET 2010 – 2013 AND 2003



2009 – 2011 were part of the Infrastructure Stimulus Funding (ISF) enhanced budget years. The amounts shown in Figure 1-4 are therefore reflective of those enhancements; however the typical annual sustainable funding has been approximately \$90M in recent years.

*Of note: At the Council meeting on December 2, 2013 Council approved the 2014 Capital Budget and 5-year capital plan. That plan increases the ongoing City’s pay as you go capital funding contribution from the operating budget by a sustainable \$10 million per year (or \$50 million for the 5-year plan) as part of an enhanced Capital Budget. Inclusive of this enhanced funding, in the last decade the City’s combined pay as you go transfers to the capital budget (from the operating budget and the sewer surcharge budget) increased from \$28M to \$73M or 260%.*

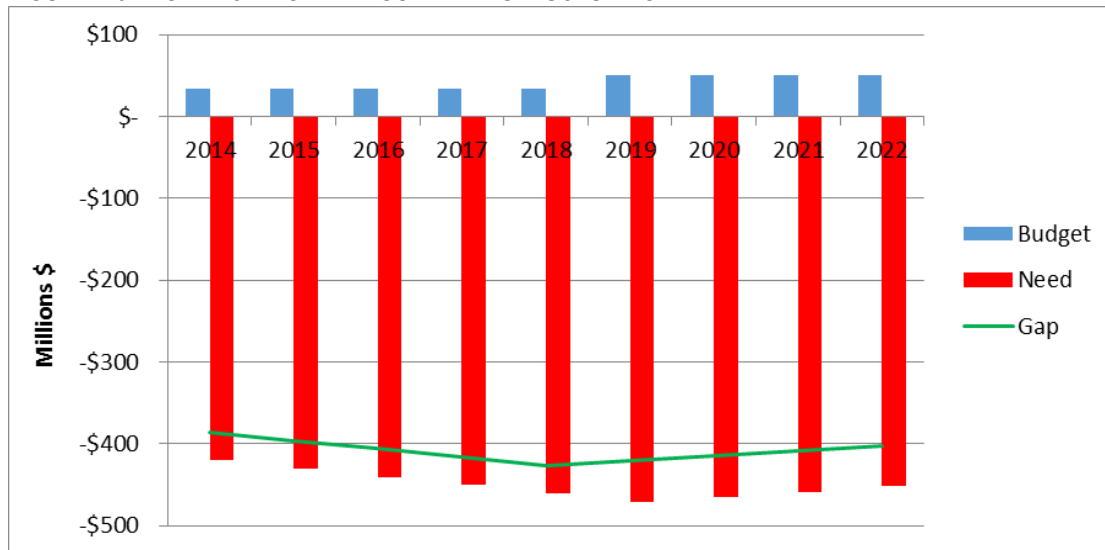
Given the timing of the approval of the enhanced funding referenced above and printing of this report, it should be noted the AMP does NOT reflect this substantial funding increase. This will be most apparent in Section 6 – Financing Strategies for any 2014 to 2022 Capital Budget projections.

Notwithstanding the City’s significant funding increase over the last decade as detailed above, the City of Windsor, like all municipalities, is faced with a substantial infrastructure deficit. In order to reduce this gap, it will require ongoing partnership amongst all levels for government.

The starting infrastructure gap, i.e. the replacement cost of those assets currently categorized as *Very Poor*, along with the profile of the gap over the next 10 years is shown in Figure 1-5 below. The available budget, based on the current estimated capital allocations in the 10 year capital program (prior

to the \$10 million annual funding increase noted above) is then applied to each year of the Plan and the difference between the two is shown as the net infrastructure gap.

**FIGURE 1-5—TOTAL CITY OF WINDSOR INFRASTRUCTURE GAP**



Based on the City's current funding strategies, it is projected that the level of Infrastructure deficit will remain relatively stable over the Plan period. This means that the percentage of assets in each of the condition categories is expected to look very similar at the end of the Plan period to what it does currently. Therefore some residents will see an improvement in the assets in their own vicinity, while others will see a corresponding worsening of the condition of assets. The projections are premised on two major strategies: 1) addressing the lifecycle needs of the assets that are currently rated as *Fair* or better in order to avoid their slide into the *Very Poor* category over time, and 2) chipping away at the accumulated deficit reflective of assets which are already in the *Very Poor* category.

Improving the overall condition of the assets, for example by reducing the percentage of assets in the *Very Poor* category, will require the senior levels of government to also increase their share of infrastructure funding. Finally, the City will need to further enhance its already considerable funding in specific asset classes in addition to also enhancing its condition assessment approaches and maintenance practices.

## 1.6 Section 7—Plan Improvement and Monitoring

This Asset Management Plan is a living document which is relevant and integral to the daily Asset Management activities at the City. To ensure the plan remains useful and relevant, the following improvement and monitoring activities are to be progressed:

- Formal adoption of the plan by Council
- Review and formal adoption of levels of service (next phase of the Asset Management work plan)
- The Corporate AMP, as a whole, is expected to be updated and communicated to Council every 5 years. Specific sections of the report will be updated as required based on new asset data, information and decisions, and will be communicated to Council as they occur.
- Quality assurance audits of asset management information to ensure the integrity and cost effectiveness of data collected.





Section 2  
Corporate Asset  
Management Plan  
Overview





# Corporate Asset Management Plan Overview

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## 2.1 What is Asset Management?

Asset management is not a new concept. The private sector has been optimizing the use of limited resources to balance growth and asset maintenance for some time now. In general, the return on investment for business assets is easily calculated and related to their bottom line. The public sector though, has struggled to quantify and relate both the tangible and intangible benefits of municipal infrastructure. Notwithstanding, asset management best practices can be adopted by municipal governments.

Traditionally, The City of Windsor has defined assets only to include the physical infrastructure that is necessary to support the social, economic and environmental services provided by the Corporation. As such, the focus of asset management best practices at the City of Windsor has been on the development and embedding of engineering, financial and business tools. More recently, however, asset intensive industries have started to look at the softer side of asset management in their goal to create a more sustainable approach to managing their assets.

This Asset Management Plan meets all provincial requirements as outlined within the Ontario ***Building Together Guide for Municipal Asset Management Plans***. As such, the following key sections and content are included:

1. Executive Summary and Introduction
2. State of the Current Infrastructure
3. Desired Levels of Service
4. Asset Management Strategy
5. Financial Strategy

This asset management plan will serve as a strategic, tactical, and financial document ensuring the management of the municipal infrastructure follows sound asset management practices and principles, while optimizing available resources and establishing desired levels of service.

At a strategic level, within the State of the Current Infrastructure section, it will identify current and future challenges that should be addressed in order to maintain sustainable infrastructure services on a long-term, life cycle basis.

It will outline a Desired Level of Service (LOS) Framework for each service area, to assist the development and tracking of LOS through performance measures across strategic, financial, tactical, operational, and maintenance activities within the organization.

At a tactical level, within the Asset Management Strategy section, it will develop an implementation process to be applied to the needs-identification and prioritization of renewal, rehabilitation, and maintenance activities, resulting in a 10 year plan that will include growth projections and address legislative requirements.

At a financial level, within the Financial Strategy section, a strategy will be developed that first looks at how adopting a comprehensive asset management approach can reduce the infrastructure deficit and then looks at a range of potential financial strategies that move the City towards a more sustainable approach to managing our assets and ensures the delivery and optimization of the 10 year infrastructure budget.

## 2.2 Importance of Infrastructure—Supporting the City of Windsor’s Goals

Municipalities throughout Ontario, large and small, own a diverse portfolio of infrastructure assets that in turn provide a varied range of services to their citizens. The infrastructure, in essence, is a conduit for the various public services the municipality provides, e.g.:

- the roads supply a transportation network service
- the wastewater and storm water infrastructure provides for the collection and appropriate processing of wastewater and storm water from municipal, domestic, commercial and industrial sources.

A community’s prosperity, economic development, competitiveness, image, and overall quality of life are inherently and explicitly tied to the performance of its infrastructure.

For Windsor, there are a number of goals that are directly supported by the maintenance of existing infrastructure along with the creation of new infrastructure including.

### 2.2.1 Delivering Windsor’s Official Plan

The *Official Plan* covers a number of goals under the following areas:

- Development Strategy
- Healthy Community
- Environment
- Land use
- Infrastructure
- Urban Design
- Heritage Conservation

Specifically in the Infrastructure section, with regard to accommodating the transportation and physical service needs in Windsor, the Council is committed to ensuring that infrastructure is provided in a sustainable, orderly and coordinated fashion and the Council’s infrastructure goals are to achieve:

- Safe, sustainable, effective and efficient infrastructure.
- Optimal use of existing infrastructure.
- An accessible, affordable and available transportation system.
- An environment in which all modes of transportation can play a balanced role.
- The provision of infrastructure in a coordinated, efficient and cost effective manner.
- Integration of planning for infrastructure with the planning for growth.
- Protection of natural features for the development and site alteration on lands located within or adjacent to the significant habitat of endangered species or threatened species, or Provincially Significant Wetlands, or natural heritage features, these activities should avoid natural heritage features and areas, and if avoidance is not possible, minimize the impact to natural heritage features.

Other strategic goals of the City that are heavily reliant on the provision and maintenance of infrastructure include:

### 2.2.2 Revitalizing the Central Riverfront

The City has the goal of creating a continuous riverfront open space network which will be upheld for future generations. This is fully detailed in the Central Riverfront Implementation Plan (CRIP), which was adopted by Windsor City Council in 2000 as the overall conceptual plan for the riverfront covering the

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period 2000 to 2025. As the CRIP is implemented, proposed municipal and private undertakings within the Central Riverfront Park Lands are reviewed with regard to the principles, objectives, and design standards cited in the CRIP and the Central Riverfront Park Lands Policies in the Official Plan. Asset Management will play an important role with regard to not only the creation of new assets, but also by ensuring that existing assets are maintained in the most cost effective and efficient way.

### **2.2.3 Attracting Industry and Manufacturing**

Windsor is the centre for Canada's automotive industry and is an emerging green energy manufacturing centre. Major employers within Windsor are clustered in manufacturing and commercial nodes across the city. It is anticipated that this trend will continue with additional nodes being developed to accommodate new and expanded employers particularly in the vicinity of Windsor International Airport, and the Sandwich South, Forest Glade and Devonshire Planning Districts. The City needs to continue to manage its assets in a way that provides industry with the necessary infrastructure to do business, but at the same time needs to understand the condition of its assets more fully so that potential asset failures can be more easily avoided and also ensure that funds are diverted to those asset most in need of attention.

## **2.3 Relationship to Other Municipal Plans and Finance Documents**

An asset management plan is a key component of the municipality's planning process linking with multiple other corporate plans and documents, for example:

- The Official Plan – The AMP will both utilize and influence the land use policy directions for long-term growth and development as provided through the Official Plan.
- Long Term Financial Plan – The AMP will both utilize and conversely influence the financial forecasts within the long-term financial plan.
- Capital Budget – The decision framework and infrastructure needs identified in the AMP form the basis on which future capital budgets are prepared.
- Infrastructure Master Plans – The AMP will utilize goals and projections from infrastructure master plans and in turn will influence future master plan recommendations.
- By-Laws, standards, and policies – The AMP will influence and utilize policies and by-laws related to infrastructure management practices and standards.
- Regulations – The AMP must recognize and abide by industry and senior government regulations.
- Business Plans – The service levels, policies, processes, and budgets defined in the AMP are incorporated into business plans as activity budgets, management strategies, and performance measures.

## **2.4 Purpose and Methodology**

Figure 2-1 depicts the approach and methodology, including the key components and links between those components that embody this asset management plan.

**FIGURE 2-1—COMPONENTS OF ASSET MANAGEMENT PLAN (AMP)**



As can be seen in Figure 2-1 above, a municipality’s infrastructure planning starts at the corporate level and ensures compliance with industry and government regulations.

Through the State of the Infrastructure analysis, the overall asset inventory, valuation, condition and performance are reported. In this initial AMP, objective condition data exists for roads, structures, sidewalks, fleet and approximately 20% of the storm and sanitary sewers. All other asset condition grades were assessed by using the current age of the asset in comparison to its overall useful or design life. Depending on the remaining percentage of useful life they were assigned a condition rating as shown in Table 2-1.

**TABLE 2-1—CONDITION RATING USEFUL LIFE REMAINING SUMMARY**

Very Good – Fit for the future	Greater than 80%
Good – Adequate for now	60%-79.9%
Fair – Requires attention	40% - 59.9%
Poor – At Risk	20%-39.9%
Very Poor – Unfit for sustained service	Less than 20%

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Section 3 identifies the way in which each assets condition was assessed. In future updates to the Corporate Asset Management Plan and State of the Infrastructure report, additional assets are planned to have objective condition information which will enhance the accuracy of the plans.

The next section of the AMP provides a framework for the City to develop Desired Levels of Service (or target service levels) and performance measures, which will be used to track the year-to-year progress towards this established target level of service. The City of Windsor has engaged in the Ontario Municipal Benchmarking Initiative, as well as tracking a range of internal performance measurements against the Program and Service listings (Appendix A). These service measurement tools will be used for our first Corporate AMP. In future years more detailed work will be done to help drive further understanding of customer, corporate and operational performance measures along with how they directly relate to the lifecycle costing of assets, sustaining asset condition at a level that supports service expectations, and informing the funding requirements to achieve this.

The Asset Management Strategy Section then provides an overview of the approach to the management of assets within the City and provides examples of where the City has been implementing good and best practice asset management approaches. Included in this section are details of future asset management practices that the City is working towards adopting. This section also provides an overview of condition assessment techniques for each asset class; life cycle interventions required, including those interventions that yield the best return on investment based on a whole life cost approach; and prioritization techniques, including risk quantification, to determine which priority projects should move forward into the budget first.

The Financing Strategy Section then fully integrates with the asset management strategy and provides a financial analysis that optimizes the 10 year infrastructure budget. All revenue sources available are reviewed, such as the tax levy, debt allocations, rates, reserves, grants, gas tax, development charges, etc., and necessary budget allocations are analyzed to inform and deliver the infrastructure programs.

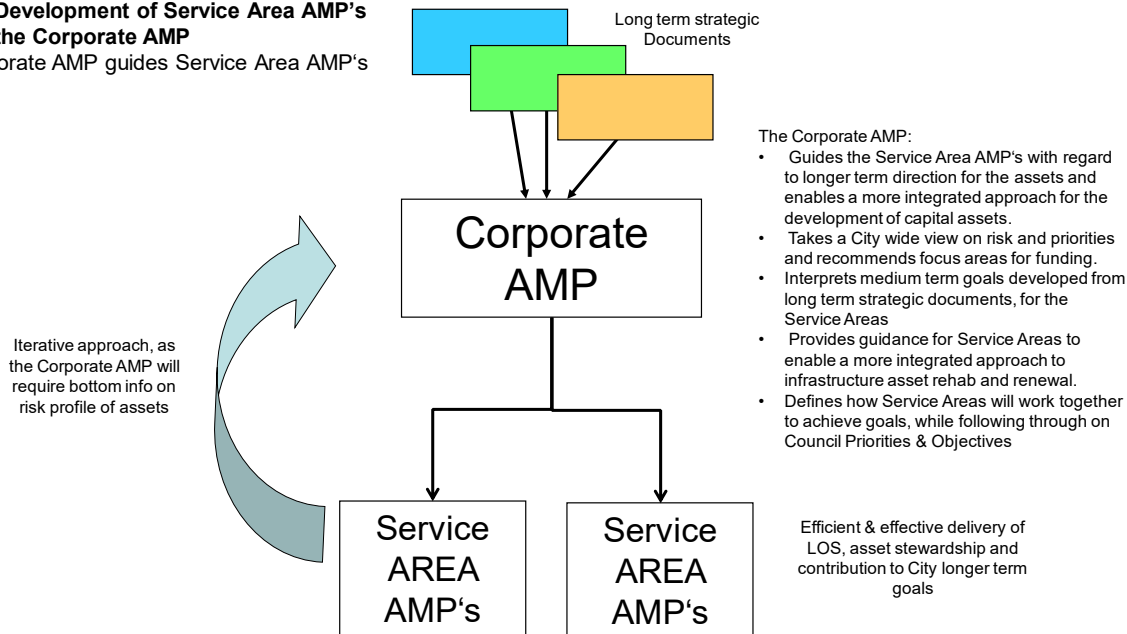
Finally, in subsequent updates to this AMP, actual project implementation will be reviewed and measured through the established performance metrics to quantify whether the desired level of service is achieved or achievable for each infrastructure class. If shortfalls in performance are observed, then these will be discussed along with the changes required to the City's approach to asset management practices, alternate financial models or service level target adjustments.

For this first version of the AMP, the aim is to take the broad City of Windsor's objectives, initiatives and strategies and interpret these for the specific service areas, thereby showing the linkage between corporate targets and individual service area targets. This AMP will then demonstrate how these targets are to be met using an optimized mixture of asset and non-asset solutions. This AMP therefore collates and summarizes information from across the City's service areas. Currently AMP's do not exist for individual Service Areas within the City and therefore information has been taken from a wide range of sources including the City's asset registers and databases, strategic plans and technical reports, to present an overview of the state of our assets, how they are performing, what their future condition and performance could look like based on current levels of funding, along with the actions we are taking to minimize any infrastructure gaps.

In the future iterations of the AMP, as part of the plan improvement actions, the AMP will begin to feed the business planning process with regards to the identification of changes required to the assets, people, and processes, and will form a long-term action plan for the major Service Areas. This is detailed in Figure 2-2 as presented below.

FIGURE 2-2—DEVELOPMENT OF SERVICE AREA AND CORPORATE AMPS

**The Development of Service Area AMP's and the Corporate AMP**  
Corporate AMP guides Service Area AMP's



The Corporate Asset Planning Team has led the development of this first version of the AMP, with support from staff from across the City who are part of the Asset Manager Network and CMMS (Computerized Maintenance Management System) Network. Reviews were also undertaken by the Asset Planning Steering Committee for endorsement and approvals with a final review of the Plan by the CAO. Below can be found further details of the Asset Management governance structure that is in place within the City, along with who the representatives are:

**Asset Planning Steering Committee:** Mario Sonogo, Onorio Colucci, George Wilkki, Harry Turnbull, Mike Palanacki, John Miceli

**Asset Manager Network:** Mark Winterton, Pete Matheson, Wes Hicks, John Wolf, France Isabelle-Tunks, John Guidolin, Chris Manzon, Errol Swan, Angela Marazita, Earl Larking, Victor Ferranti, Tom Graziano, Mike Clement, Bill Roesel, Yvan Mantha

**Computerized Maintenance Management System (CMMS) Network:** Diana Digirolamo, Eric Bailey, Monika Grant, Angela Berry, Heidi Baillargeon, Robert Palumbo, Susie Lee, Tim Stevenson

**Corporate Asset Management Team:** Melissa Osborne, Gabe Taba, Steve Kriemadis

## 2.5 Assets Covered by this Plan

This first version of the AMP includes the core asset types, as detailed in the MOI's Asset Management Plan Development Guidelines, as well as several other asset types the City manages and are listed in the City TCA database. The core service areas of wastewater, storm water, roads, and structures (including bridges) comprise a significant portion of the City's asset portfolio with a total 2012 replacement value estimated at \$4.4 billion. In addition, these assets form an integral part of the City's infrastructure asset base that contributes to its core strategic goals. The Ministry's Guidelines include the requirement that *"Best practice is to develop a plan that covers all infrastructure assets for which the municipality is responsible. At a minimum, plans should cover*

- Roads (inclusive of paved Alleys)
- Structures
- Water (This asset class is not owned by City of Windsor and belongs to Windsor Utilities)

- 
- Wastewater Systems
  - Storm Water Systems
  - Social Housing (This asset class is not owned by the City of Windsor and belongs to Windsor Essex Community Housing Corporation)

## 2.5.1 Roads and Structures

Within the City's Transportation Services portfolio, roads and bridge planning, operations and maintenance are provided as key services.

The City owns, operates and manages 1,156 km of roads and alleys and 61 bridges which are covered by this AMP. The Public Work Division has a robust process in place to manage and maintain data associated with these assets which is held in *Hansen* CMMS. Public Works tracks detailed specifications for these assets as well as maintenance and rehabilitation work done on them. The condition rating data in *Hansen* CMMS for roads is based on pavement inspections performed on the individual road segments. Pavement inspections are performed in a structured manner and are based on industry best practice principles. The inspection data is then recorded in *Hansen* CMMS and used to generate a numeric condition rating of the overall performance of the pavement.

The numeric road condition rating (calculated in the *Hansen* CMMS) is derived from road pavement inspections using an objective structured formula-based approach to minimize subjective data influence. A road segment is scheduled for inspection on a frequency range from a maximum of once every year to a minimum of once in a 7 year period based on set criteria, which includes last inspection date, age of current pavement, road classification, and current condition rating. Generally speaking, the higher the traffic volumes and the worse the pavement condition, the more frequent the inspections on a road segment. (Alley segments are scheduled for inspection on a lesser frequency because of the lower traffic volume.) Structure inspections are executed based on Ontario Ministry of Transportation requirements and the results also maintained in Hansen.

## 2.5.2 Wastewater and Storm Water Removal Systems

Key services within the City's Environmental Protection portfolio are wastewater removal and storm water removal.

The City owns, operates and manages 1,702 km of sanitary and storm sewers, 44 pumping stations and interceptors and 2 water pollution control facilities, which are covered by this AMP. There are two separate systems which house asset data for wastewater and storm water systems. The sewer network is managed and maintained in the *Hansen* CMMS system. As with roads and bridges detailed asset information is maintained in this system. A CCTV program is in place to obtain objective condition data on these assets, however due to funding challenges to date, less than 20% of the network has been inspected. Pump stations and treatment plant data is maintained in *Antero* CMMS and Supervisory Control and Data Acquisition (SCADA) systems monitor asset performance. *Antero* CMMS tracks the preventative maintenance work on equipment contained within the plant and pump stations. While formal condition ratings do not exist for all of the plant items, the preventative and reactive maintenance carried out not only helps to extend the life of these assets, but it also provides early indications of any sign of asset deterioration.

## 2.5.3 Social Housing (Exemption)

As prescribed under the Housing Services Act, 2011, the City of Windsor is the designated Service Manager for Social Housing programming in Windsor and Essex County. As such, the City is responsible for funding and administration of social housing programs.

The City is the sole shareholder of Windsor Essex Community Housing Corporation (WECHC). WECHC is governed by an external Board of Directors and owns and operates over 5,400 social housing units in Windsor and Essex County. Funding assistance for these units and all social housing units in Windsor/Essex is provided by the City of Windsor through subsidies based on legislative requirements and by operating agreements.



The City of Windsor's Housing Division does not directly manage social housing – it administers contracts with housing providers, therefore has limited direct control.

Windsor Essex Community Housing Corporation has instituted asset management strategies and practices. Included in Appendix B is a letter outlining their efforts to date, as well as some initial findings and future direction.

### 2.5.4 Water (Exemption)

The City of Windsor's potable water service is managed by Windsor Utilities Commission (WUC). While WUC and the City's Public Works Division consult on projects to leverage synergies and optimize efforts for both of their respective assets, WUC ultimately determines which projects they will proceed with on an annual basis.

WUC has instituted asset management strategies and practices. Included in Appendix C is a letter outlining the origins of WUC's asset management strategies.

### 2.5.5 Other Service Areas Included within this AMP

In addition to the core service areas as detailed above this AMP also includes the following Service Areas:

1. Corporate Asset Management
  - a. Corporate Fleet Management (Corporate Fleet does not include police, transit, airport, parks off road equipment and fire heavy equipment. Fuel sites included are all those with available data and does include a Transit site, which Corporate Fleet is not responsible for, however in this version of the AMP it is included in this asset class.)
  - b. Corporate Facilities Management (Corporate Facilities includes several facilities owned by the City but managed by an agency, board and/or commission, since they operate out of the location. For purposes of this AMP it was important to recognize these assets, however in future versions they will be separated into their respective service categories)
2. Information Technology (IT)
  - a. IT Infrastructure Operations
  - b. Business Solutions Development and Support
3. Parks and Natural Areas
  - a. Parks & Natural Areas Services
4. Transportation Services
  - a. Sidewalks and Trails (Right of Way)

Given the timelines to complete the AMP (6 months), availability of necessary data and resources we were able to expand the scope of our work to beyond the Ministry's requirements; additional asset classes covered by the plan include facilities, fleet, parks and information technology assets. Other asset classes (detailed below) were not able to be included in this initial plan given the challenging timelines. It is our intention to bring these other assets into future iterations of the plan.

Assets not included in the City's inaugural plan primarily consist of:

- Art and Heritage properties
- Horticulture and forestry
- Land
- Fire – heavy equipment
- Street lights, metered parking lots, pay stations
- Parks amenities such as benches, lighting, garbage cans, trails, sidewalks, planters and irrigation

All of the City's agencies, boards and commission are not included in the Corporate AMP. They are managed independently and the City does not make decisions on the assets they manage. The City has a significant amount of work ahead to develop and implement asset management practices, policies and procedures for the \$5.2 Billion assets the City is outlining in this AMP. As these practices, policies and procedures are put in place for the City assets covered in this AMP, the ability to introduce those practices to the agencies, boards and commissions will be pursued in the future with the respective boards and agencies.

Of note, some facility assets which these organizations operate out of are owned and managed by the City and are therefore included in this plan under Corporate Facilities, such as the Airport and Transit Windsor.

## 2.6 Timeframes

Due to the strategic nature of the AMP, it should cover planning horizons relevant to the nature of the asset base (i.e. reflect the expected service lives and not the estimated remaining life of the existing asset base). Some assets, such as fleet, computers etc. are relatively short-lived assets. Conversely many of the City's higher value assets such as roads, buildings, sewers, pump stations and plants have asset lives' that are measured in decades. Future versions of the AMP will consider the longer timeframes associated with these assets, so that the shorter term decisions can be considered in the context of the complete asset lifecycle. However, currently in the City, not all data sets are complete and therefore to enable a consistent approach across all service areas, a ten year time frame has been selected for the first version of this AMP.

In the future the timeframe will be adjusted, as more data becomes available, which will enable better knowledge of the asset base, which can, in turn, be fed into more sophisticated predictive deterioration modeling approaches.

The City's progress as measured against the AMP will be monitored on an annual basis, taking into account both changes to business drivers and improved information, and the progress of the planned delivery of the investment program and operational activities. It is planned that the AMP will be subject to a major update every four to five years. Should significant changes arise within this timeframe that impact the AMP, an interim review will be undertaken. Production of future versions of the AMP will tie in with the City's business and investment planning horizons - currently a minimum ten years across the City, as well as aligning with the actual allocation of funds agreed through the business planning process.

Table 2-2 below shows the proposed update frequencies of the AMP and associated documents.

**TABLE 2-2—TIMEFRAMES AND FREQUENCY FOR REVIEW**

Document	Frequency
AM Policy	Every 10 years
Corporate AMP	Every 4-5 years
State of Infrastructure Report	Every 2-3 years
Service Area AMPs	Every 4-5 years
Capital Budget	Annually

## 2.7 Data Alignment

Through the PSAB 3150 Tangible Capital Asset (TCA) project the *City Wide TCA* system was populated with information drawn from various sources. For linear assets the foundation information used for *City Wide TCA* was extracted from the Hansen CMMS database used to manage and maintain all technical, operational and maintenance data on these assets. Corporate Fleet asset data was extracted from *Fleet Focus* CMMS which is used to manage and maintain all technical, operational and maintenance data on these assets. For the balance of assets, information was extracted from various other sources and or physically located by internal staff or consultants and used to populate a complete listing of City assets in one location.

The basis for much of the information within this Plan is the City's database of municipal infrastructure information, *City Wide TCA* and in addition the Plan has leveraged asset data from the operational areas to ensure it mirrored their core systems. The *City Wide TCA* database is the City's financial record of all assets in the City deemed to be TCA's. *City Wide TCA* will ultimately contain the municipality's asset base, valuation information, life cycle activity predictions, costs for activities, sustainability analysis, project prioritization parameters, key performance indicators and targets, 10 year asset management strategy, and the financial plan to deliver the required infrastructure budget.

*City Wide TCA* and this Plan will be further synchronized over time, and will evolve together year-to-year as more detailed information becomes available. This synchronization will allow for ease of updates, modeling and scenario building, and annual reporting of performance measures and results. This will allow for continual improvement of the plan and its projections. It is therefore recommended that they are revisited and updated on an annual basis.

For certain assets such as roads, bridges, sidewalks, sewers and fleet, the core data and condition information held in the *Hansen CMMS* and *Fleet Focus CMMS* was used to populate condition data in the *City Wide TCA* database as this information was not originally populated in *City Wide TCA* for PSAB reporting purposes. In addition, a new subjective rating methodology for those sewers not having objective CCTV inspection ratings was developed and applied in order to populate updated subjective sewer ratings into the *City Wide TCA* database. This also served as a validation process of asset listings in both systems to confirm agreement and identify and correct gaps. It should be noted that *Hansen CMMS* is used extensively for the operational management of linear assets. As such there will be immaterial variances to quantities between *Hansen CMMS* and *City Wide TCA* due to timing differences of status changes in an asset.

For all other assets the data in *City Wide TCA* was used as the initial assets listing and was vetted with the Service Areas for confirmation of completeness and subjective condition ratings based on remaining useful life, with a final review and confirmation by expert staff in the area, to identify situations in which the condition was different than indicated by *City Wide TCA*. This would result in a change in the remaining useful life for certain asset classes.

Asset data for roads, bridges, sidewalks and sewers is based on an extract of Hansen CMMS data as of June 14, 2013. Information for all other assets is based on end of 2012 closing balances. Assets acquired and or disposed of since these dates will not be reflected in this report, nor will condition data updated since that time as a result of ongoing inspection programs.

## 2.8 Plan Monitoring and Review

Development of this first version of the City's AMP, has provided a better understanding of the requirements for future AMP versions, and has helped to identify data/knowledge gaps.

Key improvement initiatives and plans for how the AMP is to be monitored, improved and reviewed are detailed in Section 7 – Plan Improvement and Monitoring.

The centralized Corporate Asset Management office will be responsible for monitoring the progress of the plan annually.

**Section 3**  
**State of Local**  
**Infrastructure**







# State of Local Infrastructure

## 3.1 Asset Inventory

The Corporation of the City of Windsor owns and operates a sizable portfolio of assets that span several service areas. This section of the AMP covers the City's infrastructure aligned to the services under the direct control of the City and excludes indirect services administered by Boards and Agencies, as detailed in Section 2.2. The Ministry of Infrastructure's ***Building Together – Guide for Municipal Asset Management Plans*** requires, at a minimum, that the following assets be included: Roads, Bridges, Water, Wastewater and Social Housing. Given water and social housing fall outside of the City's direct control these two asset types are addressed by documentation in the Appendices.

The remaining required assets: Roads, Structures, Wastewater and Storm Water, are managed by the City of Windsor.

The Tangible Capital Asset value based on 2012 replacement cost data is \$5,220,895,361 for the assets covered by this Plan, which are identified in Section 2.5. The road, structures, storm water and wastewater assets make up approximately 80 % of the total City's asset defined in this plan by value with a total 2012 replacement cost estimated at \$4.4 Billion. Figure 3-1 provides a high-level overview of the roads, structures and wastewater inventory included within the scope of this AMP.

**FIGURE 3-1—INVENTORY OF MINISTRY REQUIRED ASSETS (ROADS, STRUCTURES, WASTEWATER AND STORM WATER)**

Asset Type		Inventory
<b>Total Wastewater &amp; Storm Water</b>		
Linear: Pipes and Appurtenances		1,702,480 m of pipe
Facilities: Pumps Stations, Reservoirs and Wells		44 facilities
<b>Wastewater: Sanitary</b>		
Collection System: Local and Trunk sanitary sewers		949,321 m
Treatment facilities: Water Reclamation Plants and Pump Stations		14 Facilities
<b>Storm Water: Storm</b>		
Storm water System: Storm Sewers Pipe and conveyances		761,277 m of pipe
Storm water Facilities: Pumping Stations & Interceptors		30 Facilities
<b>Roadways</b>		
Roads and Paved Alleys		1,156,290 m
Structures	Bridges and subway	61
	Major Culverts (> 3 m)	8
	Pedestrian Bridge (ROW only)	6

In addition to the Ministry required assets detailed above, the City also manages a considerable portfolio of assets in the following service areas:

1. Corporate Asset Management
  - a. Corporate Fleet Management
  - b. Corporate Facilities Management
2. Information Technology (IT)
  - a. IT Infrastructure Operations
  - b. Business Solutions Development & Support
3. Parks and Natural Areas
  - a. Parks & Natural Areas Services

#### 4. Transportation Services

- a. Sidewalks and Trails (ROW includes all sidewalks and select multiuse trails within ROW)

Several other assets fall into the Roads Service category for the City as well, including signals, noise barriers, parking garages and parking lots.

In comparison to the three required asset categories of Roads, Structures and Wastewater, the total replacement value of the other assets is less than 20% of the total value of the City's asset base identified in this report and is estimated at \$800M. While they make up only 20% of the assets identified in this plan they are material to the City and require capital and operational funding to sustain and develop them to meet service level expectations. To provide a more comprehensive view of the City's assets we have included the assets for all City services which reside in our PSAB 3150 system in this first plan. While there are still more assets throughout the City the data availability is not readily available and their capital valuation does not meet PSAB thresholds. In future reports we will continue to work with the operational areas to refine and improve asset reporting and data management to improve and expand the information in the corporate asset management plans.

### 3.2 Corporate Fleet Management

Assets range from vehicles (trucks, vans, cars, SUV's, sewer cleaners) and municipal fuel sites. The Crawford Yard garage is included in the Corporate Facilities listing as it is not separated from the balance of the building. No fleet equipment in the garages is included in this first AMP. In addition Corporate Fleet does not include police, transit, airport, parks off road equipment and fire heavy equipment. Fuel sites included are all those with available data and does include a Transit site, which Corporate Fleet is not responsible for however in this version of the AMP it is included in this asset class.

### 3.3 Corporate Facilities Management

Corporate Facilities Management assets covered in this Plan includes several facility types such as multi-use recreation; recreation; park; police; environmental; transitional; administrative; parking and operations yard. The Corporate Facilities listing also includes several facilities owned by the City but managed by an agency, board and/or commission since they operate out of the location. For purposes of this AMP it was important to recognize these assets. In future versions of the AMP they will be separated into their respective service categories.

### 3.4 Information Technology

#### 3.4.1 Business Solutions Development & Support (IT)

Business Solutions Development & Support assets covered in this Plan include desktop hardware such as monitors, desktops, laptops, printers and software applications, which were included in TCA's (i.e. over \$200,000).

#### 3.4.2 Network and Data Services (IT)

Network and Data Services assets covered in this Plan include all back end infrastructure assets such as servers, network gear, phone systems and UPS.

### 3.5 Parks and Natural Areas

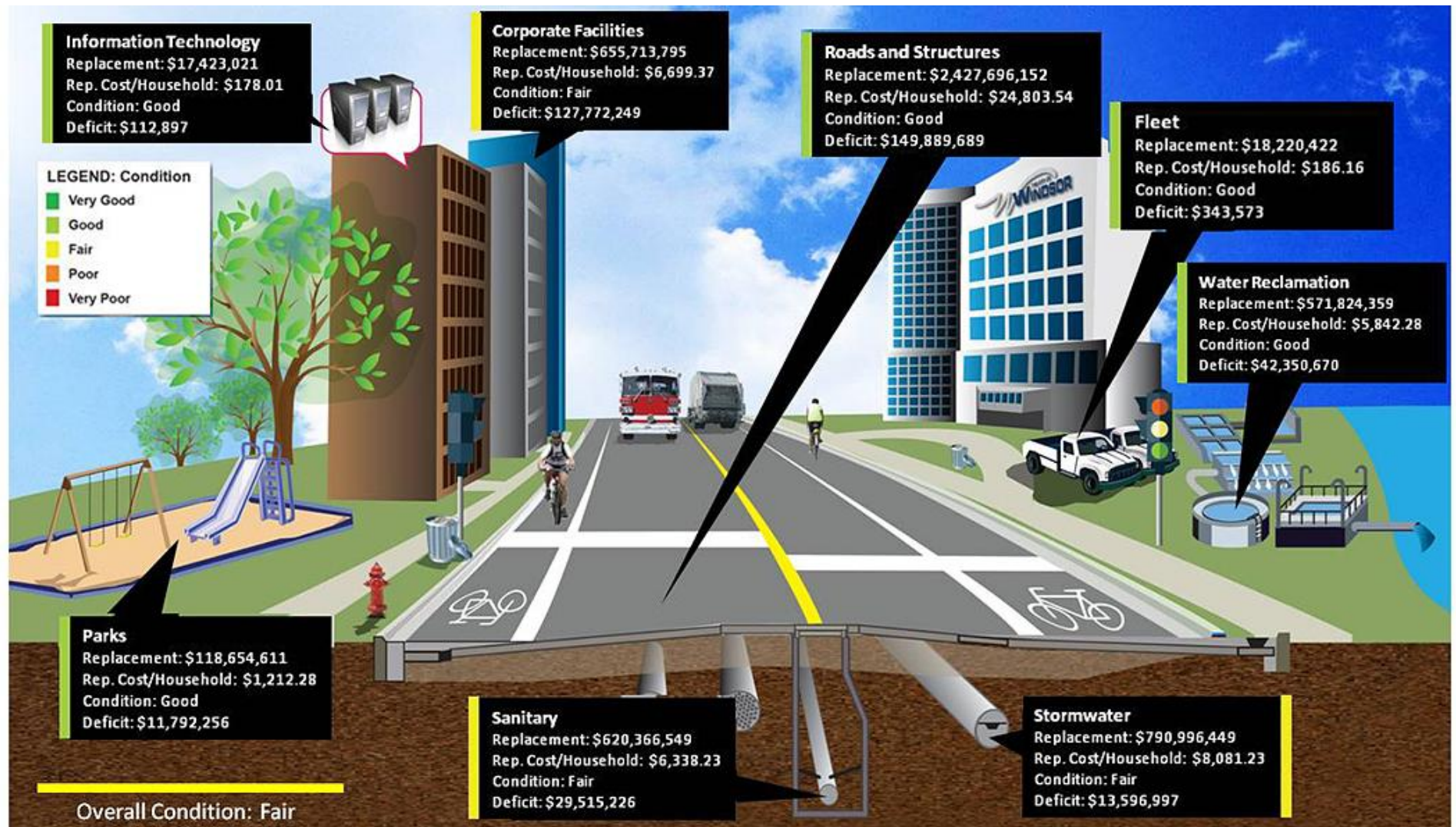
Parks and Natural areas assets covered in this Plan include parking lots, sports fields, playground equipment, fountains, shore walls, spray pads, parks equipment, trails and park bridges.

### 3.6 Transportation Services – Sidewalks and Trails (Right Of Way)

Transportation Services – Sidewalks and Trails assets covered in this Plan include all sidewalks and select trails in the ROW throughout the City

Figure 3-2 is an urban graphic summarizing the replacement value, and condition of the City's assets.

FIGURE 3-2—OVERALL SUMMARY OF CONDITION, REPLACEMENT VALUE AND ESTIMATED INFRASTRUCTURE GAP FOR THE CITY OF WINDSOR



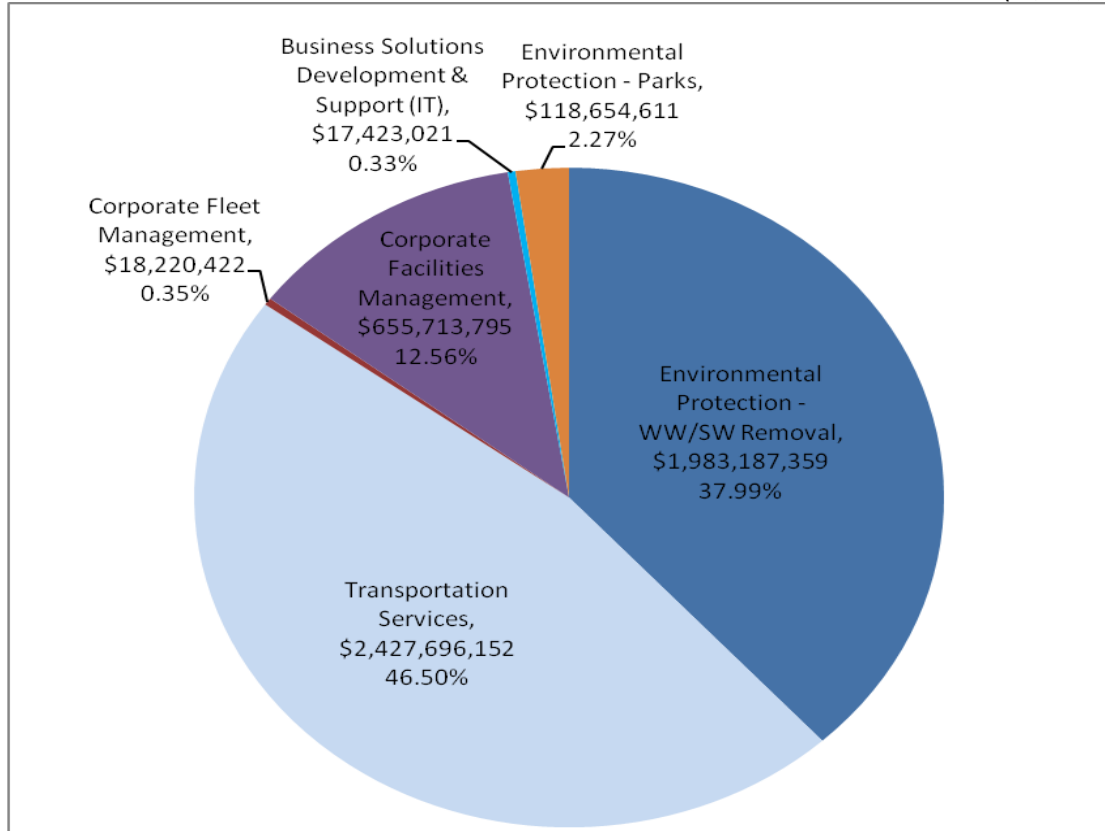
## 3.7 Asset Valuation

Based on the asset inventory data that was compiled for each service area, a valuation was undertaken based on the 2012 replacement cost of each asset type. The assets valuations were based on data in our Tangible Capital Asset system. The population of the Tangible Capital Asset system was part of the PSAB financial reporting requirements. This required local government to present information about the complete stock of their tangible capital assets and amortization in the summary financial statements. The City needed to comply by January 1, 2009. These values are recalculated on an annual basis, using Consumer based indices appropriate for each of the asset types. As such the 2012 replacement costs, used in our financial reporting, have been utilized for all assets covered within the AMP. The Total City Tangible Capital Asset valuation included in this report is \$5,220,895,361.

Since the efforts of Operations, Engineering and Finance staff were used in 2007 to determine reasonable replacement costs for linear assets our experience has shown that approximately 80% of the replacement project cost for these assets have been within a reasonable range of the original replacement cost. Despite this confirmation that generally the replacement costs being used in this report are reasonable, the following should be noted - All replacement costs are based on the cost to replace the asset with the exact same asset. There is no growth, technology change, enhancement assumptions included in those costs. As such these costs should be viewed with caution as a project to replace an asset may differ greatly, as has been seen in around 20% of the situations. Variables such as land acquisition, legal fees, and even design changes to the asset being replaced will all impact the actual cost to replace it.

It should be noted that for assets that have relatively lengthy useful lives such as water, wastewater assets and roads, the use of replacement cost valuation along with an assessment of condition is a more useful indicator for decision-making compared to using the assets depreciated value, since many long life assets may still be serviceable for some time to come, despite being fully depreciated. As such the AMP relies on the use of current replacement cost of assets as its basis for asset valuation. For this reason, large value municipal holdings such as land, trees, artwork and cultural buildings were not considered in this report. The replacement cost for such items may not be able to be quantified and or can be misleading as the replacement cost may vary greatly year to year for such assets. Future versions of the AMP will consider ways in which to include these assets.

In addition to the replacement costs, details of the depreciated historical costs, based on a combination of the 2012 Closing or 2013 Opening Net Book Value are also included for the assets covered by this Plan. Comparison of the two figures for each asset group will provide a general indication of the amount of the assets deemed design or useful life that has been consumed.

**FIGURE 3-3—TOTAL 2012 REPLACEMENT COST OF ALL ASSETS COVERED WITHIN THE AMP (\$5,220,895,361)**

The following sections provide detailed asset valuation information on the core asset classes of, Roads, Structures, Wastewater and Storm Water.

### 3.7.1 Roadways Valuation

The value of the City's extensive road network is slightly less than \$2 Billion. The Roads asset base includes all municipal roads and paved alleys. Provincial freeways pass through Windsor but fall under the ownership and control of the Province and therefore are not included within this plan. Paved alleys are also included as a separate category.

Road classifications include C1 Arterial, C1 Collector, C2 Arterial, C2 Collector, Expressways, Local Residential, Local Commercial/Industrial, and Scenic Parkways. These assets include road base, drainage, pavement, curb and gutter and islands. Paved alleys are also included in the AMP's road inventory listing.

All critical data regarding asset details on roads is managed and maintained in the *Hansen* CMMS database by the Technical Support Infrastructure Management System team of the Public Works Operations Department. Objective pavement condition data is maintained for each road segment in *Hansen* CMMS. On an annual basis, City staff performs pavement inspections of the road segments that have been identified and scheduled for inspection for that given year. A road segment is scheduled for inspection on a frequency range from a maximum of once every year to a minimum of once in a 7-year period based on set criteria which, includes last inspection date, age of current pavement, road classification, and current condition rating. Generally speaking, the higher the traffic volumes and the worse the pavement condition, the more frequent the inspections on a road segment. Alley segments are scheduled for inspection on a lesser frequency because of the lower traffic volume. Pavement inspections are performed in a structured manner and are based on industry principles. Pavement inspection data is then used to generate a numeric condition rating of the overall performance of the pavement. The numeric road condition rating (calculated in the *Hansen* CMMS) is derived from road pavement inspections using an objective structured formula-based approach to minimize subjective data influence. Road condition ratings are also updated following the completion of road rehabilitation/



reconstruction projects and new construction projects as information becomes available. The numeric condition ratings are used routinely by Public Works for the purposes of rehabilitation, reconstruction, and maintenance planning and in budget planning. These numeric condition ratings have been mapped to the Corporate AMP Condition Rating categories of Very Good, Good, Fair, Poor and Very Poor.

As part of the preparation for the new PSAB TCA reporting requirements an asset valuation was initially completed in 2007. Operational, Engineering and Finance staff were engaged to determine a replacement cost value for roads based on material type. These initial replacement costs are annually recalculated based on Consumer based indices appropriate for various asset types.

Also as part of the work required for PSAB TCA reporting requirements discussions were held with operational and engineering staff as to what the intended design life would be for the various types of roads and road materials. This has been used as the useful life value for depreciation of the road assets, which factors into the current Net Book Value (historical cost less depreciation).

**FIGURE 3-4—ROADWAYS ASSET VALUATION**

Asset Type	Asset	Inventory	Unit	2012 Replacement Value	2012 Depreciated Value	
				(\$K)	(\$K)	
Roadways	Roads	C1 Arterial	13,098	m	112,398.94	23,198.43
		C1 Collector	99,415	m	171,380.14	26,564.34
		C2 Arterial	127,969	m	492,186.80	93,244.52
		C2 Collector	71,976	m	115,719.10	22,072.79
		Local Residential	668,313	m	702,077.57	119,311.68
		Local Commercial/Industrial	14,675	m	19,693.56	1,889.66
		Scenic Parkway	15,989	m	22,996.84	2,513.85
		Expressway	65,842	m	219,069.52	20,985.00
	Alleys	Paved Alleys	79,017	m	39,658.71	78.74
<b>TOTAL</b>					<b>1,895,181.18</b>	<b>309,859.01</b>

### 3.7.2 Structures Valuation

Assets falling under the Structures category are broken out based on their primary purpose. Bridges and major culverts are classified as vehicle crossing structures and pedestrian bridges are major pedestrian crossings at highways or waterways. Subways are structures that support vehicle movement under railways. Bridges and major culverts are inspected and assessed according to Provincial Bridge Standards and maintained accordingly. The remaining structures are assessed and renewed on a planned basis according to the findings of engineering studies and expert opinion. Of note there are 3 culverts not listed in the AMP as their replacement cost is currently unknown. They will be included in future AMPs.

**FIGURE 3-5—STRUCTURES ASSET VALUATION**

Asset Type	Asset	Inventory	Unit	Replacement Value	Depreciated Value
				(\$K)	(\$K)
Structures	Bridges and Subway	61	Ea.	316,664.09	75,312.96
	Major Culverts (> 3m id)	8	Ea.	4,309.32	1,426.30
	Pedestrian Bridges (ROW)	6	Ea.	11,375.18	6,132.23
<b>TOTAL</b>				<b>332,348.60</b>	<b>82,871.49</b>

### 3.7.3 Wastewater—Sanitary Asset Valuation

Sanitary assets are managed and maintained to meet provincially issued system and facility operating permits, as well as City of Windsor technical targets for performance and reliability. Valued at over \$1 Billion, this extensive network of assets can be grouped into two categories; collection and treatment. Collection assets represent the largest component of the wastewater system inventory, and include pipes, manholes and related equipment. Treatment assets include the City's two Water Reclamation Plants, and their related equipment, including treatment train components (e.g. screens, clarifiers, disinfection units, etc.) and process electrical and instrumentation. Also included in the treatment category are wastewater Pumping Stations, which share many similar equipment type assets and are operated and maintained in the same manner as the Water Reclamation Plants. Linear assets that form the sewer collection pipes constitute a relatively high proportion of the sanitary system value (approximately 60%).

The wastewater assets are managed and maintained in separate software solutions. The sewers are managed and maintained in the *Hansen* CMMS. Equipment at the plants, pump stations and interceptors are managed in the *Antereo* CMMS for recording preventative maintenance and monitored for performance through a SCADA system which helps manage plant and pump station operations as well as to alert staff to issues.

The sewer network in *Hansen* CMMS has a combination of objective Closed Circuit Television (CCTV) ratings for condition as well as subjective ratings for those assets with no CCTV rating. There is less than 20% of the network which has CCTV ratings and therefore approximately 80% of the sewer linear assets have been rated on a subjective scale with regard to their current condition. During the process of updating the TCA database with condition data from *Hansen* CMMS it was determined that the subjective information in *Hansen* CMMS had been completed several years ago and therefore in order to determine more current subjective ratings, the Operational and Engineering staff, along with assistance from the Asset Planning staff, determined and applied updated subjective ratings. The definition of this process and mapping to the corporate condition ratings can be found in Appendix D. The mapping of the CCTV ratings to the Corporate Condition Ratings is based on information provided by the Public Works Division to ensure consistency with their use of the CCTV ratings, which is consistent with industry standards.

FIGURE 3-6—WASTEWATER – SANITARY ASSET VALUATION

Asset Type	Asset	Inventory	Unit	Replacement Value (\$K)	Depreciated Value (\$K)
COLLECTION	Sanitary Sewers	711,779	m	418,000.85	132,600.14
	Combined Sewers	229,424	m	198,744.72	27,121.82
	force Mains	8,118	m	3,620.98	1,130.63
TREATMENT	Water Reclamation Plants	2	Ea.	420,463.06	130,112.70
	(Incl. Equipment)				
	Pump Stations & Interceptors	14	Ea.	47,935.65	19,530.93
(Incl. Equipment)					
<b>TOTAL</b>				<b>1,088,765.26</b>	<b>310,496.23</b>

### 3.7.4 Storm Water Asset Valuation

An extensive network of infrastructure and equipment is operated and maintained by the City in order to manage storm water. Valued at just under \$900 Million, the storm water infrastructure is broken into three categories encompassing the sewer network, interceptors and pumping stations. The storm sewers include appurtenances such as catch basins, municipal drains and maintenance holes. The storm sewers are where the majority of storm water inventory value lies.

The storm water assets are managed and maintained in separate systems. The linear assets, all storm sewers, are managed and maintained in the *Hansen* CMMS. Equipment, pump stations and interceptors



are managed in the *Antereo* CMMS for recording preventative maintenance and monitored for performance through a SCADA system which helps manage plant and pump station operations as well as to alert staff to issues.

Condition ratings for the storm sewer network are based on objective CCTV inspections or subjective ratings for those assets with no CCTV inspection rating. Less than 20% of the network has CCTV ratings and therefore like the Sanitary Collection network, it is important to note that approximately 80% of the storm linear network has been rated on a subjective scale. As a component of the AMP development process, a review of subjective ratings was undertaken by Operational, Engineering, and Asset Planning staff in order to update the subjective rating methodology and to generate new subjective ratings for use in the TCA database. The definition of this process and mapping to the corporate condition ratings can be found in Appendix D. The mapping of the CCTV ratings to the corporate condition ratings is based on information provided by Public Works to ensure consistency with their use of the CCTV ratings, which is consistent with industry standards.

Replacement cost for both these assets types were assessed in 2007 during the TCA project. The sewer network replacement cost was based on a function of material type and pipe diameter per meter. The plants and pump stations replacement costs were a function of historical cost, if attainable, inflated to current value or third party expert evaluations were carried out of pump stations for remaining useful life and replacement cost. These values were stored in the TCA database and are recalculated annually using a Construction Price Index.

**FIGURE 3-7—STORM WATER ASSET VALUATION**

Asset Type	Asset	Inventory	Unit	Replacement Value (\$K)	Depreciated Value (\$k)
STORM WATER CONVEYANCE SYSTEM	Storm Sewers	761,278	m	790,996.45	190,240.64
	Pumping Stations, Drains and Interceptors	30	Ea.	103,425.64	26,505.05
<b>TOTAL</b>				<b>894,422.09</b>	<b>216,745.69</b>

### 3.7.5 Other Asset Classes

**FIGURE 3-8—ASSET VALUE WITHIN OTHER SERVICE AREAS**

Service Area	Replacement Value (\$k)	Depreciated Value (\$k)
Parks and Natural Areas	118,654.61	55,369.07
Corporate Facilities	655,713.79	243,013.44
Information Technology	17,423.02	953.61
Corporate Fleet	18,220.42	6,136.45
Transportation (not including roadways and structures)	200,166.37	34,188.91

## 3.8 Asset Useful Life

The determination of life of an asset for TCA purposes was a combination of useful life and design life. For the sanitary and storm assets the estimated remaining useful life of a physical asset, based on the age of the asset, is considered a good starting point to estimate the overall well-being of an asset pool, however in many cases the percentage of useful life consumed may not be the most suitable indicator of current asset condition. Infrastructure assets in particular undergo a continual process of repair, rehabilitation and refurbishment in order to maintain their intended purpose. For example roads, bridges and facilities typically undergo a continual maintenance and rehabilitation process and hence age may not be the most suitable indicator to use for asset management planning. As such in many cases asset

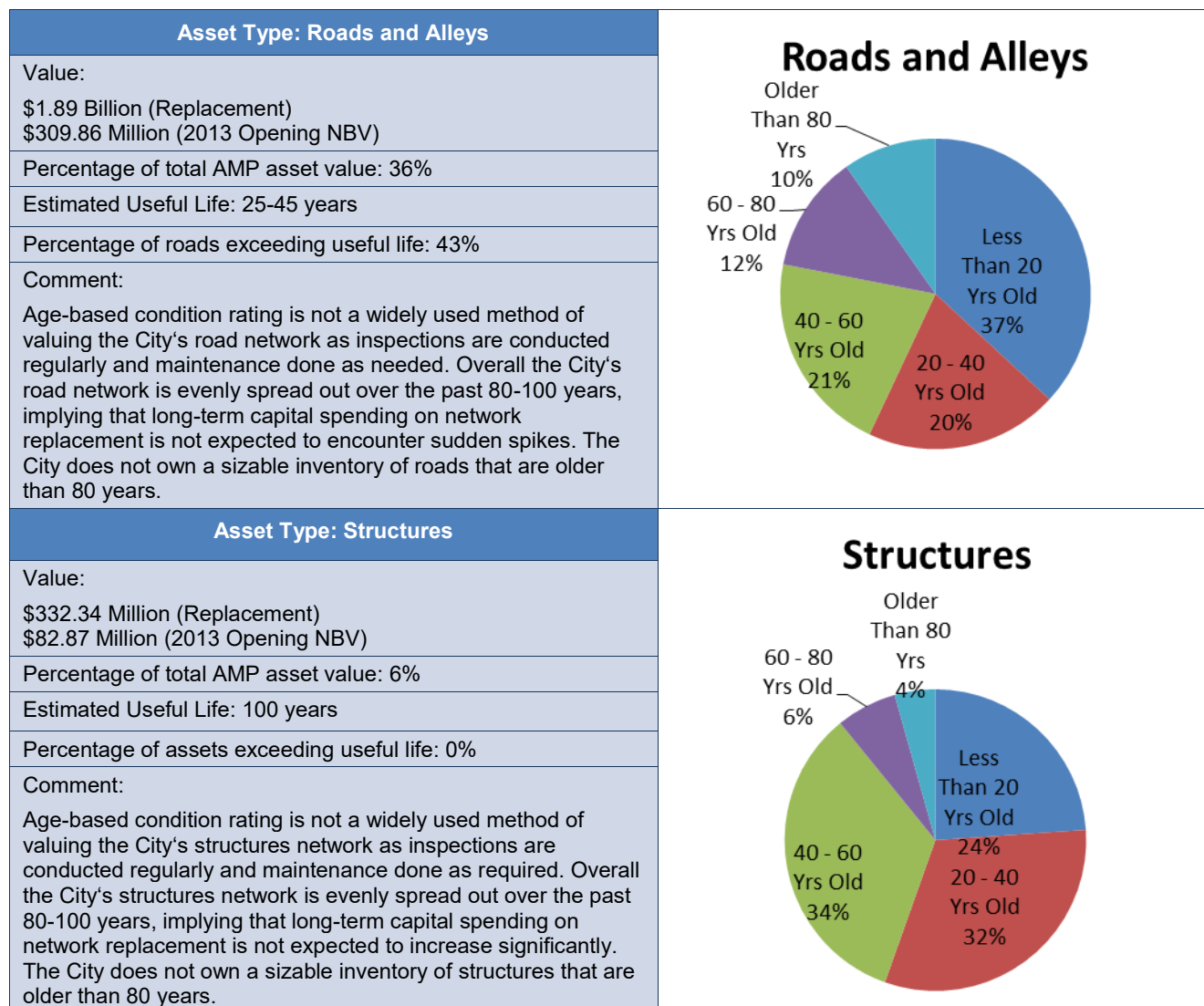
useful life needs to be augmented with other information such as actual asset condition rating, history of asset upgrades, and expert judgment.

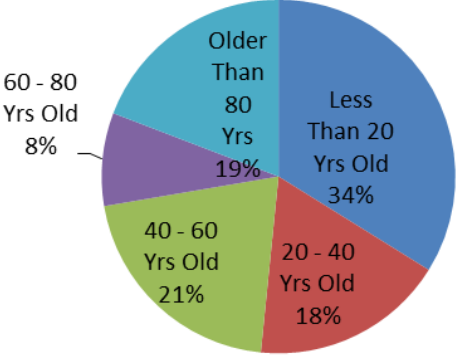
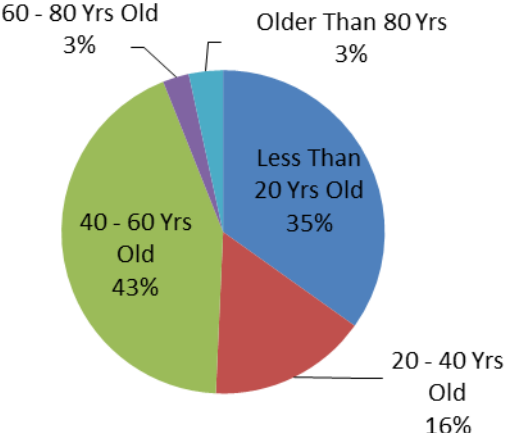
It should be noted that estimated useful lives, based purely on age, can sometimes provide a misleading view of the replacement timing for the assets. In many cases assets that are properly constructed and maintained may outlive their estimated useful life and continue providing valued service. In other cases, due to poor workmanship and lack of proactive maintenance, assets may fail before they fulfill their estimated useful life.

As described in Section 3.4, the City of Windsor has utilized a hybrid approach that relies on asset age, assumed useful life, actual asset condition rating where available and expert judgment to evaluate the condition state of the various asset types. A comprehensive matrix of all asset condition definitions and assumptions are provided in Appendix E.

Assumptions for asset useful life were based on those used originally for the TCA inventory used for financial reporting, further supplemented by individual service area knowledge.

This section provides a high-level overview for the major asset classes reflecting the original in service date for these assets to provide a perspective of the development history of the City. These graphs do not reflect various maintenance and rehabilitation strategies which are used to extend the life of an asset as well as improve its overall condition. The results of those efforts are better viewed in the Section 3.4 where the actual condition of the asset, rather than age based on in service date, are reflected.

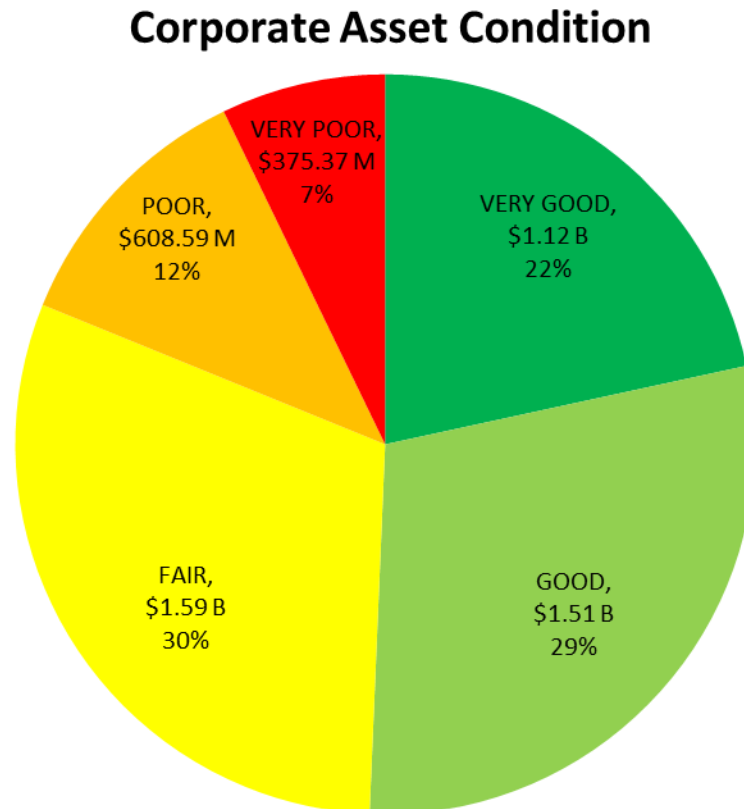


<b>Asset Type: Wastewater</b>													
Value: \$620.37 Million (Replacement) \$160.85 Million (2013 Opening NBV)	<h3 style="margin: 0;">Sanitary Sewers</h3>  <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <caption>Sanitary Sewers Age Distribution</caption> <thead> <tr> <th>Age Group</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Less Than 20 Yrs Old</td> <td>34%</td> </tr> <tr> <td>20 - 40 Yrs Old</td> <td>18%</td> </tr> <tr> <td>40 - 60 Yrs Old</td> <td>21%</td> </tr> <tr> <td>60 - 80 Yrs Old</td> <td>8%</td> </tr> <tr> <td>Older Than 80 Yrs</td> <td>19%</td> </tr> </tbody> </table>	Age Group	Percentage	Less Than 20 Yrs Old	34%	20 - 40 Yrs Old	18%	40 - 60 Yrs Old	21%	60 - 80 Yrs Old	8%	Older Than 80 Yrs	19%
Age Group		Percentage											
Less Than 20 Yrs Old		34%											
20 - 40 Yrs Old		18%											
40 - 60 Yrs Old		21%											
60 - 80 Yrs Old	8%												
Older Than 80 Yrs	19%												
Percentage of total AMP asset value: 21%													
Estimated Useful Life: 25-75 years													
Percentage of assets exceeding useful life: 27%													
Comment: Lack of available widespread condition assessment of sewers makes age a relevant indicator of condition. Pipe type and date of installation were also factors utilized. Overall, the City's sanitary sewer network is evenly spread out over the past 80-100 years therefore long-term capital spending on network replacement is not expected to encounter sudden spikes. The City does own a sizable inventory of sanitary mains that are older than 80 years. In the short-term these are expected to require immediate evaluation.													
<b>Asset Type: Storm Water</b>													
Value: \$791 Million (Replacement) \$190.24 Million (2013 Opening NBV)	<h3 style="margin: 0;">Storm Sewers</h3>  <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <caption>Storm Sewers Age Distribution</caption> <thead> <tr> <th>Age Group</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Less Than 20 Yrs Old</td> <td>35%</td> </tr> <tr> <td>20 - 40 Yrs Old</td> <td>16%</td> </tr> <tr> <td>40 - 60 Yrs Old</td> <td>43%</td> </tr> <tr> <td>60 - 80 Yrs Old</td> <td>3%</td> </tr> <tr> <td>Older Than 80 Yrs</td> <td>3%</td> </tr> </tbody> </table>	Age Group	Percentage	Less Than 20 Yrs Old	35%	20 - 40 Yrs Old	16%	40 - 60 Yrs Old	43%	60 - 80 Yrs Old	3%	Older Than 80 Yrs	3%
Age Group		Percentage											
Less Than 20 Yrs Old		35%											
20 - 40 Yrs Old		16%											
40 - 60 Yrs Old		43%											
60 - 80 Yrs Old	3%												
Older Than 80 Yrs	3%												
Percentage of total AMP asset value: 17%													
Estimated Useful Life: 75-100 years													
Percentage of assets exceeding useful life: 6%													
Comment: Lack of available widespread condition assessment of storm sewers makes age a relevant indicator of condition. Overall the City's storm sewer network is evenly spread out over the past 80-100 years, implying that capital spending on network replacement is not expected to dramatically increase. The City does not have a sizable inventory of storm water mains that are particularly old however more objective data is being sought to determine if there are any immediate short-term concerns.													

### 3.9 Asset Condition

For the 2013 AMP, the condition of each asset group was evaluated in order to gain an overall perspective on the current health of the City's infrastructure. Future iterations of the municipal AMP will expand this assessment to include other service measures such as adequacy and reliability which will better reflect the ability of the city's assets to meet the service needs of City of Windsor citizens. Figure 3-9 gives an overall view of the condition of the City assets covered by this plan, based on their 2012 replacement values.

FIGURE 3-9—CITY OF WINDSOR'S OVERALL ASSET CONDITION



A five-point rating scale has been used which aligns with that employed by the National Infrastructure Report Card produced by the Federation of Canadian Municipalities (FCM), Canadian Society of Civil Engineers (CSCE), and CCA. In addition to providing a sound basis for assessment, this will allow for future high-level benchmarking against other municipalities across Canada. Ratings range from 1 to 5, as described in Figure 3-10 below, reflecting each asset group's physical condition. Please note the comprehensive matrix of all asset condition definitions for all asset classes and assumptions are provided in Appendix E.

FIGURE 3-10—ASSET CONDITION GRADE SUMMARY

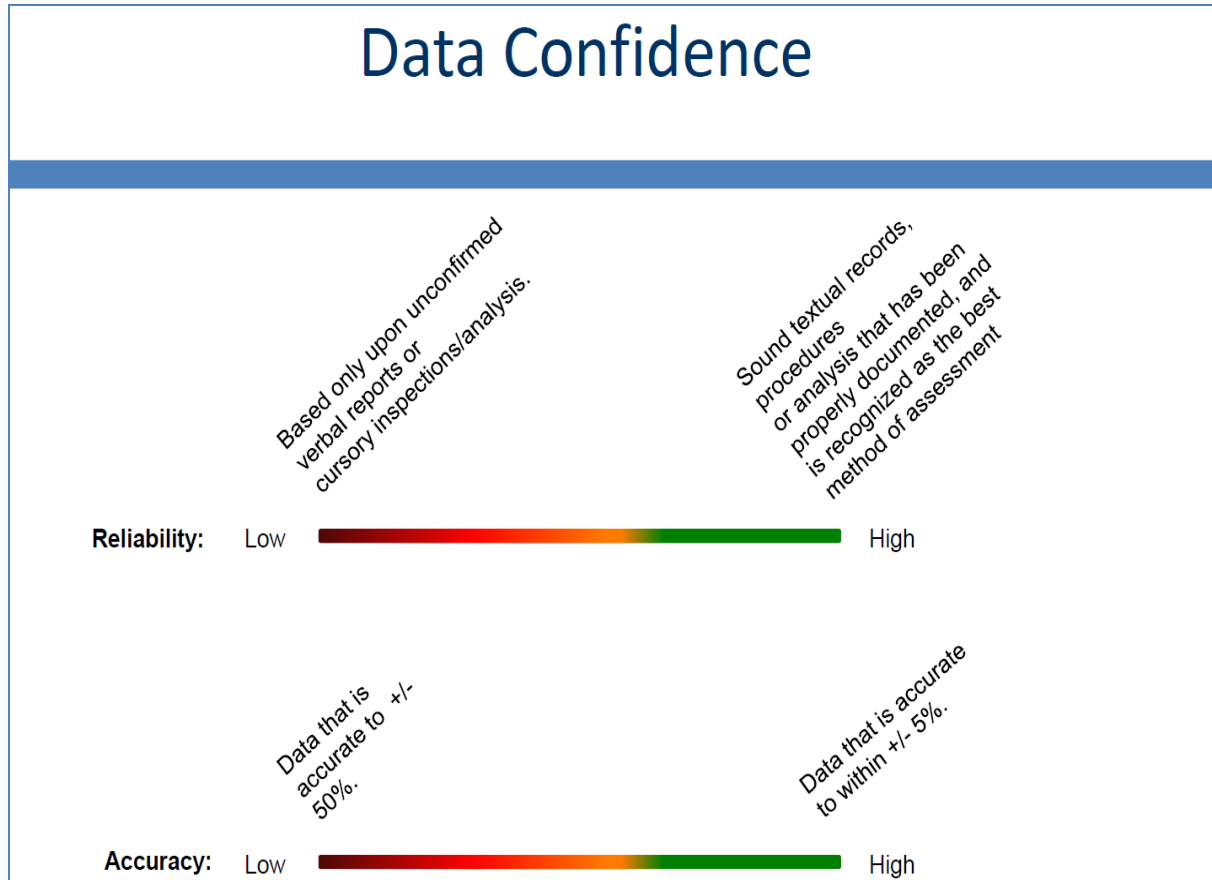
1	Very Good	The infrastructure in the system or network is generally in very good condition, typically new or recently rehabilitated. A few elements show general signs of deterioration that require attention.
2	Good	The infrastructure in the system or network is in good condition; some elements show general signs of deterioration that require attention. A few elements exhibit significant deficiencies.
3	Fair	The infrastructure in the system or network is in fair condition; it shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies.
4	Poor	The infrastructure in the system or network is in poor condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration.
5	Very Poor	The infrastructure in the system or network is in unacceptable condition with widespread signs of advanced deterioration. Many components in the system exhibit signs of imminent failure, which is affecting service.

The following section provides a high-level overview of the condition of each asset class included within the scope of the City's 2013 AMP. Asset classes within this section of the AMP have been categorized according to the City of Windsor Corporate Asset Hierarchy and do not align directly with the core service areas used in the previous sections.

Generally replacement values have been used to enable the condition grades to be rolled up and summarized at the Service Area level. For Roads, alleys, sidewalks and the sewer network it was determined that the use of linear meters in each condition grading would be a more accurate reflection of the true overall condition of these particular asset classes.

An assessment has been made of the data confidence for data used for each of the asset classes. Data Confidence takes in consideration the reliability and the accuracy of the data as detailed in Figure 3-11.

**FIGURE 3-11—DATA CONFIDENCE – RELIABILITY AND ACCURACY LEVELS**



### 3.9.1 Services Asset Condition

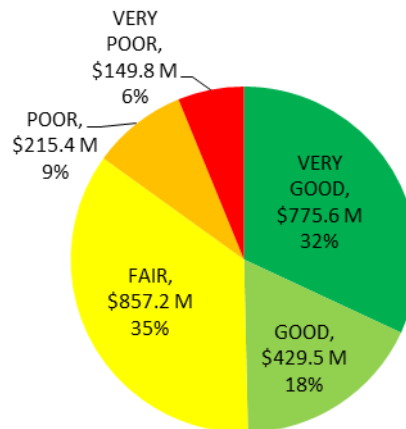
#### 3.9.1.1 Transportation Services Summary Asset Condition Levels

Transportation Services	Replacement Value: \$2.42B	Depreciated Value: \$426.91M
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Over 80% of the city's transportation services assets are in fair to very good condition, with the remainder approaching the end of their expected useful lives, indicating a need for investment in the short to medium term. The city's transportation assets are overall in good condition, indicating that they are meeting current needs but are aging and may require attention.



**Transportation Services**



Overall Condition = Good

**Data Confidence:**

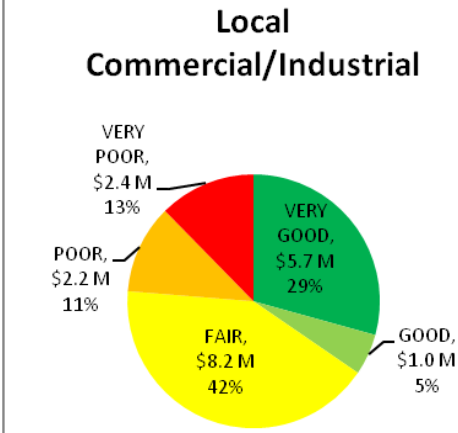
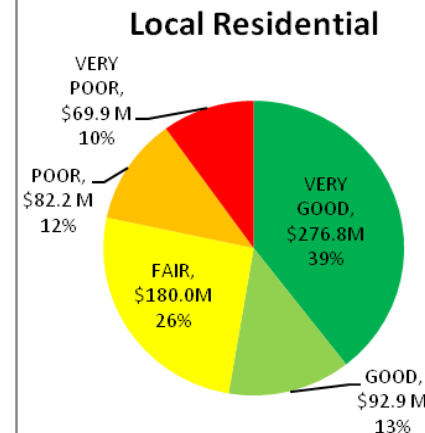
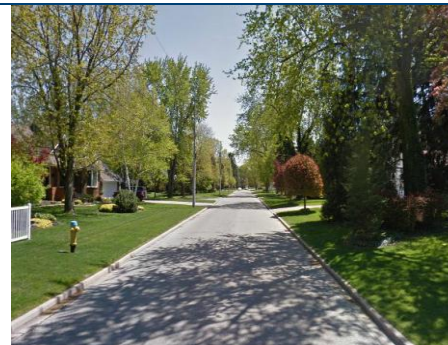
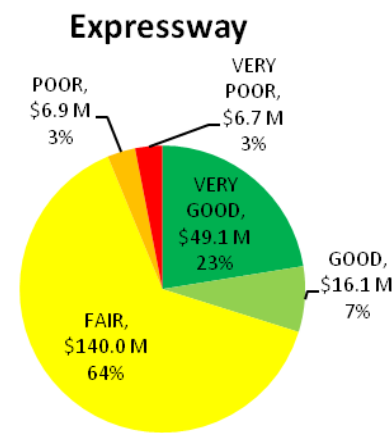
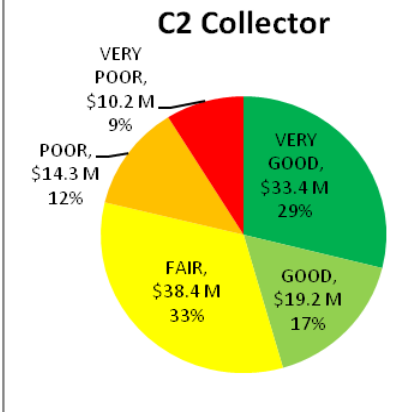
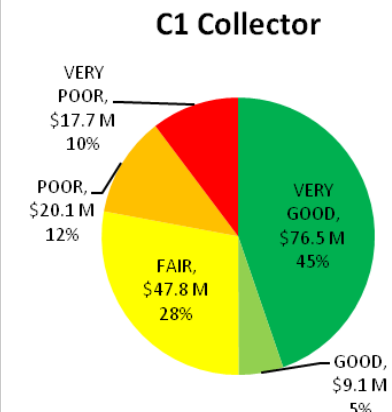
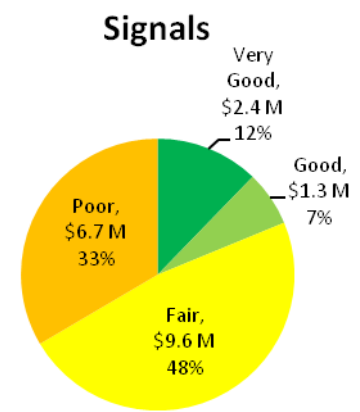
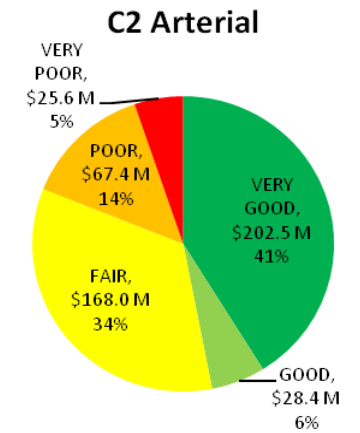
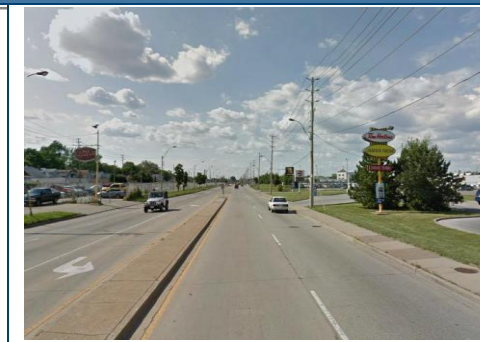
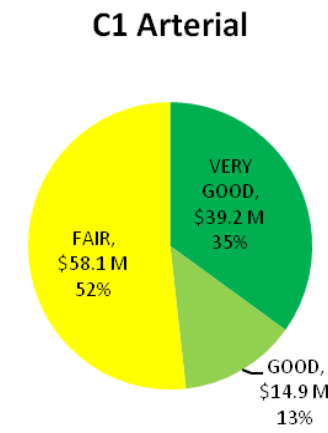
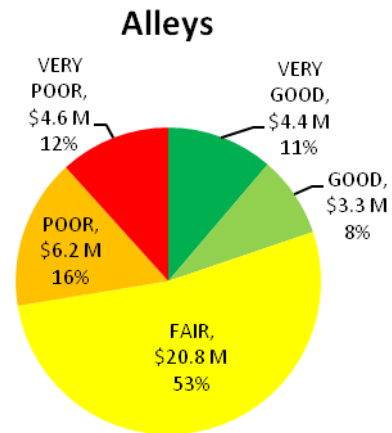
Data reliability for road, alley, structure and sidewalks are rated as high. Inventory has been verified through our TCA database and backed up with Hansen CMMS data. Alleys which are unpaved (approximately 70 kms) are excluded from the AMP and roads recently assumed by the Ministry of Transportation are included in this report (approximately 15 kms). Valuation is based on 2012 replacement costs from our TCA database. Condition and investment forecasts for these assets are also based on good engineering practices and analysis as well as expert opinion. Overall road and alley condition accuracy is rated high as it is derived from road pavement inspections using an objective structured formula-based approach to minimize subjective data influence. Signals and parking garage data (annual condition assessment reports) are also deemed as reliable and accurate and backed up by the TCA database. The condition of the parking garages is monitored routinely as is signal system performance. While objective condition ratings are not yet completed for signals (scheduled in 2014), the subjective evaluation is based on expert opinion of in field staff responsible for the maintenance and inspection of these assets in compliance with the highway traffic act and the regulations contained within as well as the requirements of the Ontario Traffic Manuals (OTM).





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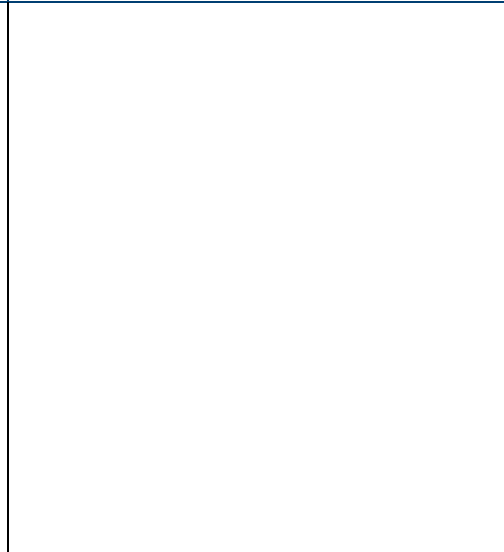
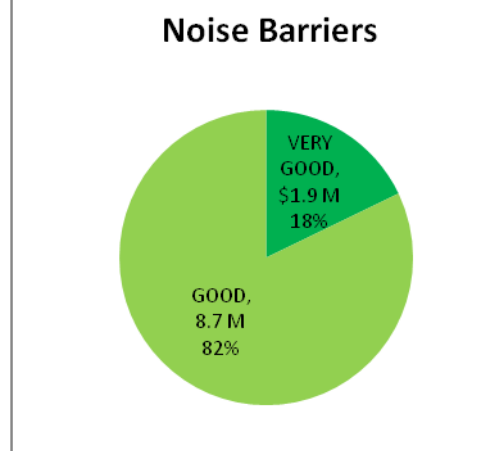
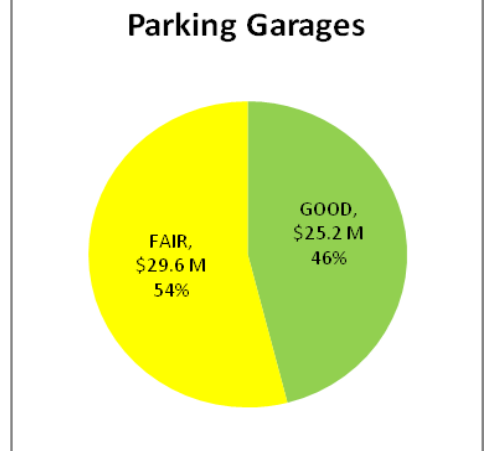
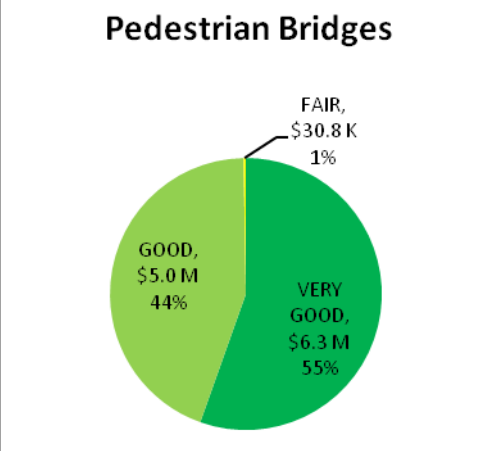
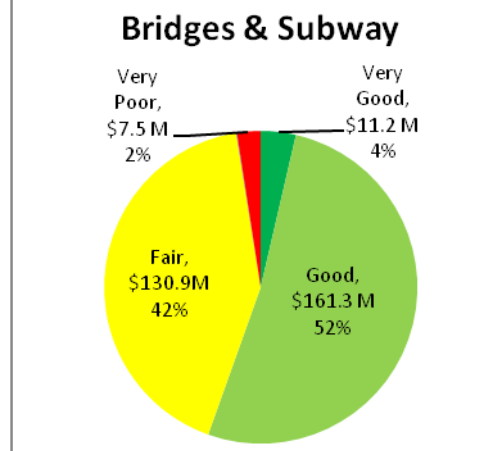
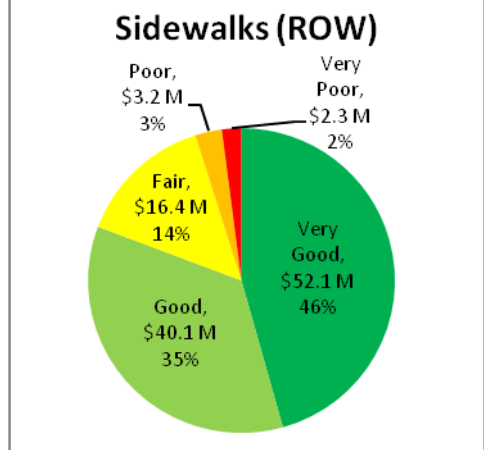
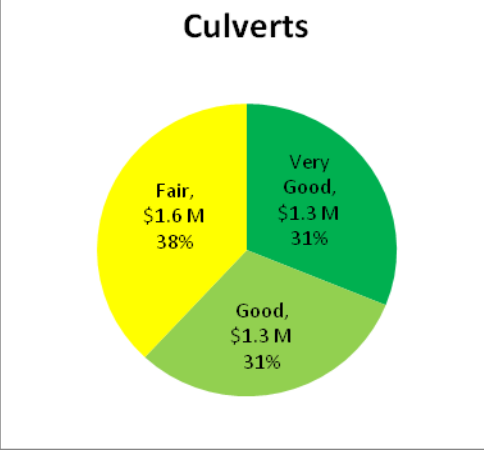
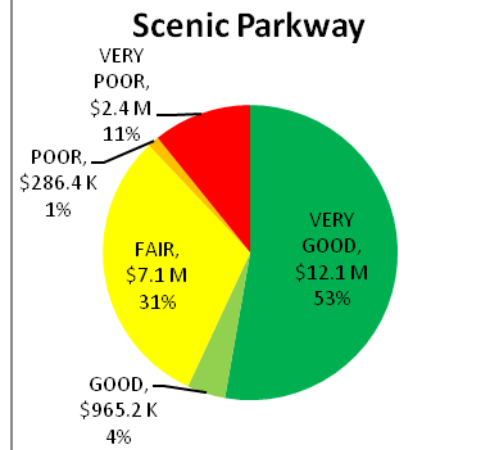
Transportation Services



(Condition based on % of length for linear assets)



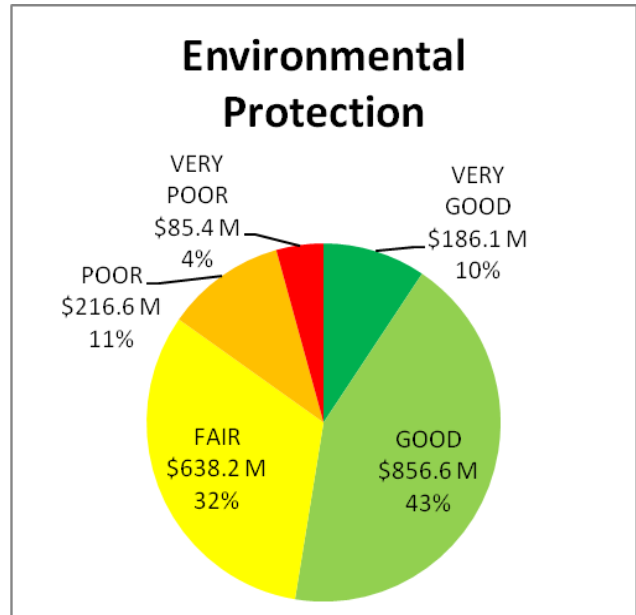
Transportation Services



(Condition based on % of length for linear assets)

Environmental Protection – Wastewater/ Storm water Removal	Replacement Value: \$1.98B	Depreciated Value: \$527.24M
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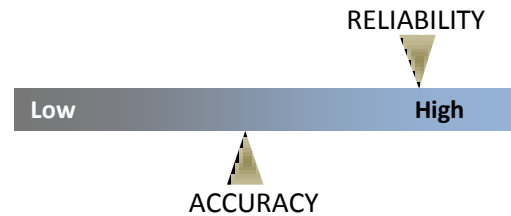
Approximately 85% of the City's Wastewater and Storm Water collection system are in **Fair** to **Very Good** condition, with the remainder approaching the end of their expected useful lives, indicating a need for investment in the short to medium term. The City's Environmental Protection assets are overall in **Fair** condition, indicating that they are adequately meeting the current needs of the municipality.



Overall Condition = Fair

**Data Confidence:**

Given the extensive asset data held regarding these assets in *Hansen* CMMS and *Antero* CMMS there is a high degree of reliable and accurate information regarding these assets. The accuracy rating is less than high however due to the volume of subjective condition ratings used. The subjective ratings for plants and pump stations are supported by objective information such as preventative maintenance and SCADA monitoring, which are used to oversee the plant and pump station operations. This information is also used for the 10 year replacement forecasting on these assets to ensure reserve funding levels are sufficient. Approximately 80% of the sewer network, which is included in this category, are subjective ratings. This affects the accuracy rating for these assets as the condition data is mostly subjective and should not be considered wholly accurate. It should be noted that subjective ratings for sewers are not relied upon for decision making on project priorities. Sewers being considered for replacement will have a CCTV evaluation completed prior to any project recommendations being made.



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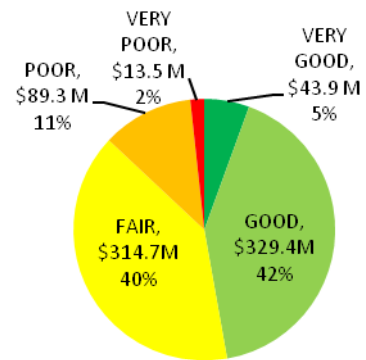
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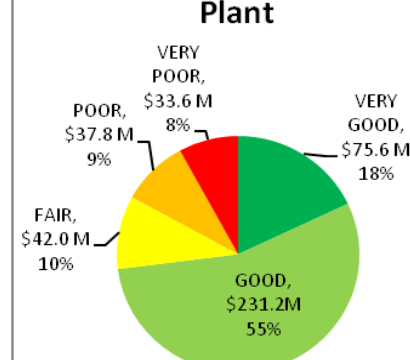
Environmental Protection – Wastewater/Storm water Removal



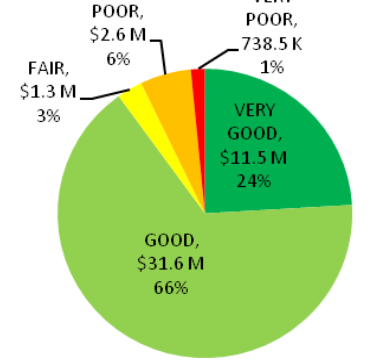
**Storm Water Collection**



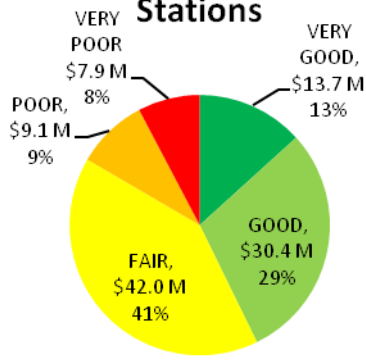
**Water Reclamation Plant**



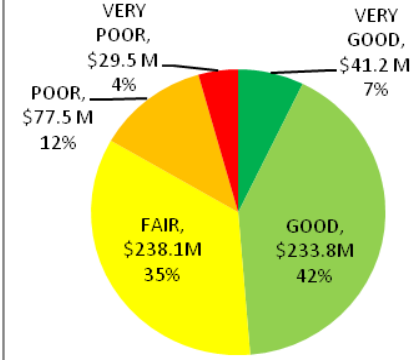
**Sanitary Pump Station**



**Storm Water Pump Stations**



**Wastewater Collection**



(Condition based on % of length for linear assets)



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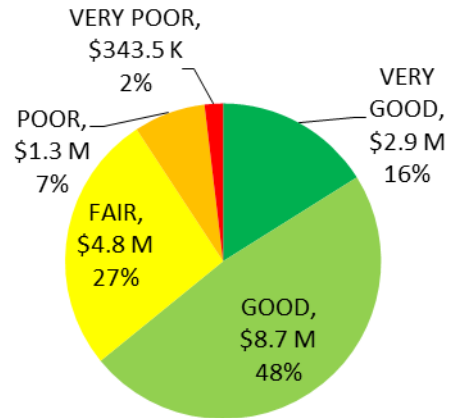
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<b>Corporate Fleet Management</b>	<b>Replacement Value: \$18.22M</b>	<b>Depreciated Value: \$6.13M</b>
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Over 89% of the City's Corporate Fleet Management assets are in **Fair** to **Very Good** condition, with the remainder approaching the end of their expected useful lives, indicating a need for investment in the short to medium term. The City's Fleet assets are overall in **Good** condition, indicating that they are meeting current needs, but replacement will be required in near future. There is a replacement strategy as well as a fleet reserve in place to identify and fund these needs.



**Corporate fleet Management**



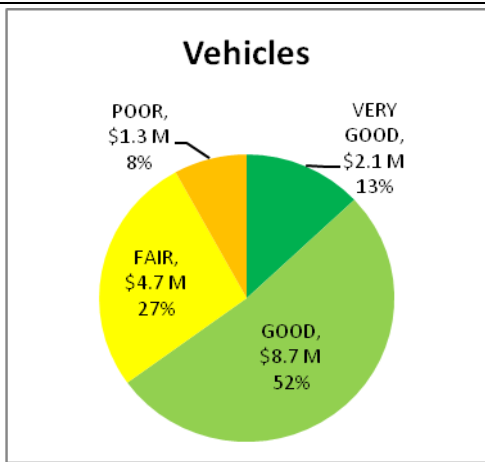
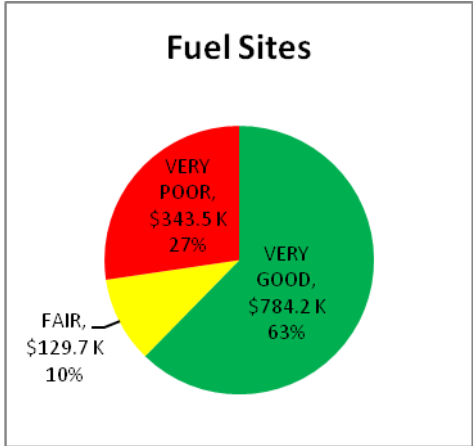
Overall Condition = Good

**Data Confidence:**

Data reliability and accuracy for Corporate Fleet management is rated as high. Detailed asset information is maintained in the *FleetFocus* CMMS including costs. Preventative maintenance strategies are in place to sustain the life of these assets and monitor their overall condition. There are extensive policies and procedures which govern the corporate fleet process, including 10 year forecasts for fleet replacement. The corporate fleet includes the vehicles managed by the Fleet Division of the Public Works Operations Department (i.e. vehicles used in municipal operations including heavy, medium, light, and specialized vehicles). The scope of the corporate fleet does not include Transit Windsor, Police, and Airport fleets as well as Fire heavy equipment and parks off road equipment. The fuel sites listed are those which are represented in TCA as separate assets. Some fuel sites were adopted into the total cost of a facility and or fell under the threshold amount and as such are not identified in the fuel site graphs. In addition, although the Transit fuel site is not part of the Corporate Fleet responsibility is included in this report rather than creating a separate graph for the one site. In short this should not be deemed as an exhaustive list of fuel sites nor a reflection of just those managed by the Corporate Fleet division. Efforts to separate the fuel sites from within the larger facility they are located at will be part of the work plan to improve future AMP's.



<b>Corporate Fleet Management</b>	<b>Replacement Value: \$18.22M</b>	<b>Depreciated Value: \$6.13M</b>
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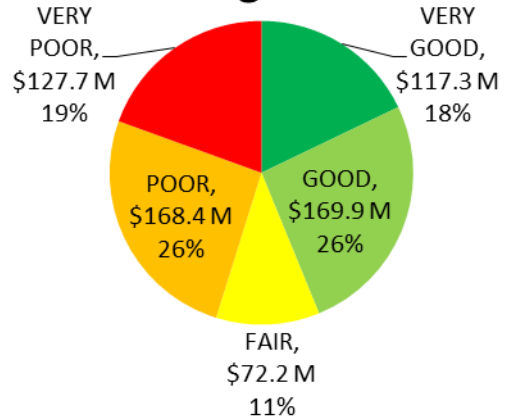


<b>Corporate Facilities Management</b>	<b>Replacement Value:</b> \$655.59M	<b>Depreciated Value:</b> \$243.01M
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Over 50% of the City's Corporate Facilities assets are in **Fair to Very Good** condition with the remainder approaching maintenance periods or the end of their expected useful lives. Minor investment may be needed in the short to medium term in order to maintain Corporate Facilities properly. The City's Facilities assets are in **Fair** condition overall indicating that they are meeting current needs and ongoing inspections will be performed to determine greatest needs.



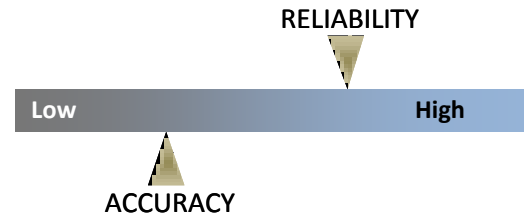
### Corporate Facilities Management



Overall Condition = Fair

**Data Confidence:**

Information regarding building assets has improved over the last couple of years. Implementing *Facility 360* CMMS to manage and maintain their asset data, including reactive and preventative maintenance work orders provides more reliability on information. The accuracy remains below average as the information currently available is at the building level and condition information is subjective. This is an area identified in Section 7 for improvement over the next several years. Breaking down the building into major components against which replacement costs and condition are applied will provide a more accurate assessment to identify what in a building needs to be addressed. Currently the condition assumes the condition is applicable to the entire building. As such limited reliability should be placed on the information. In addition replacement costs are also based on the entire building. This can lead to an overstatement of the cost of very poor assets as it may be a roof and HVAC replacement needed rather than a full building being reconstructed. Conversely an overall rating of fair for a building may not be properly reflecting a very poor condition of an HVAC or roof in need of repair. Efforts to break down the major components of a building along with condition and replacement cost will not only help to identify the needs more appropriately it will lead to better data for funding needs of maintenance, rehabilitation and replacement strategies for these assets.



Of note several facility categories identified below have less 3 or less building represented in their graph. They are: Long Term Care; Multi-use Recreation; Police and Transit. These should be reviewed with that understanding.

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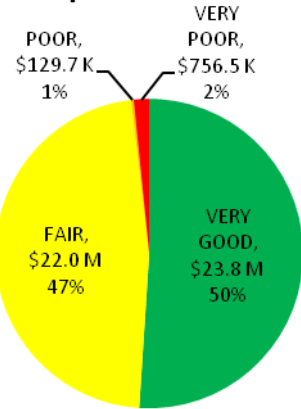
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Corporate Facilities Management



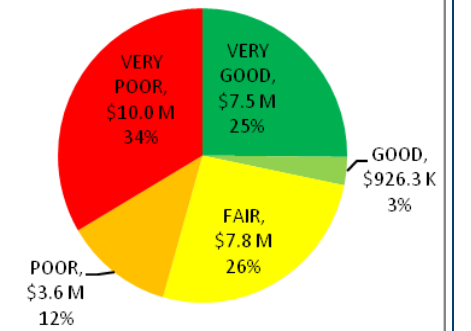
**Airport Facilities**



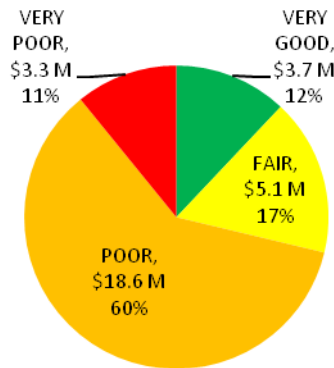
**Long Term Care Facilities**



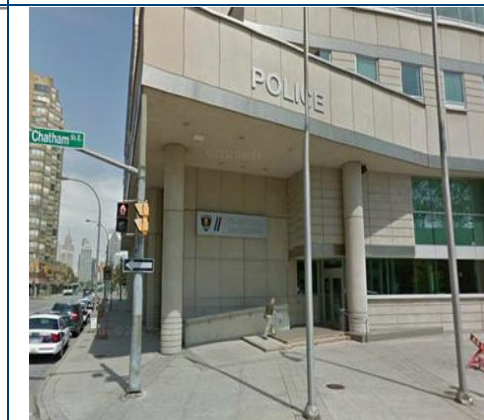
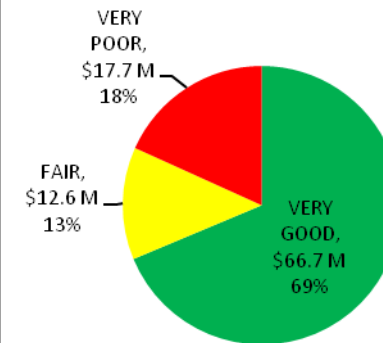
**Park Facilities**



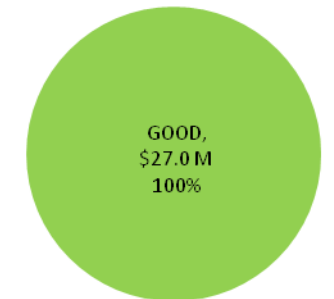
**Fire Facilities**



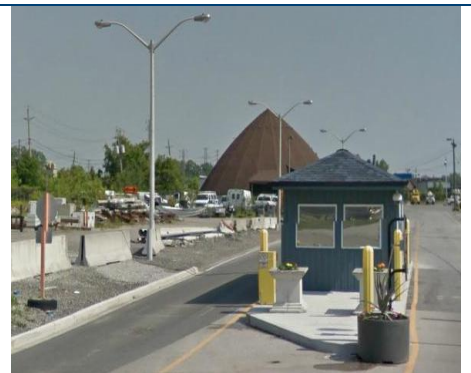
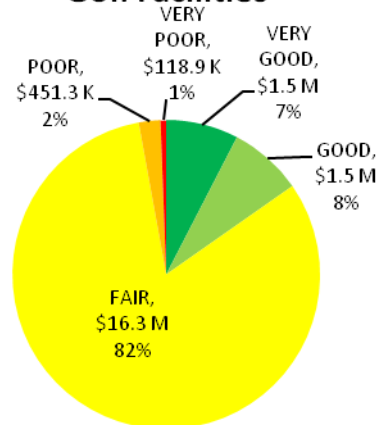
**Multi-use Recreation Facilities**



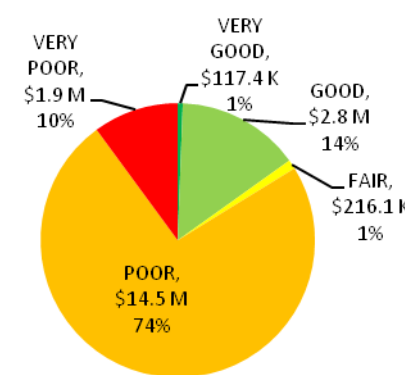
**Police Facilities**



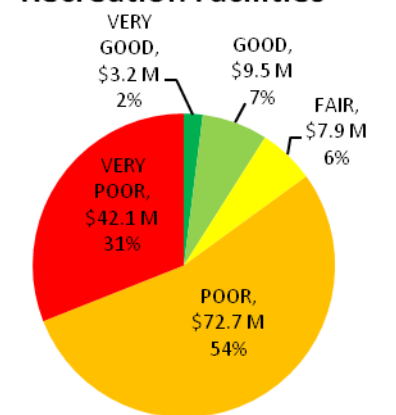
**Golf Facilities**



**Operations Yard Facilities**



**Recreation Facilities**





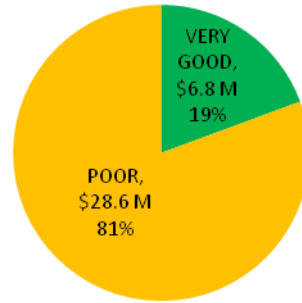
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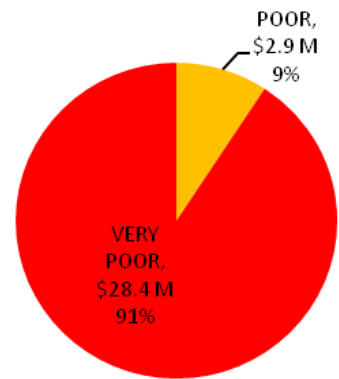
Corporate Facilities Management



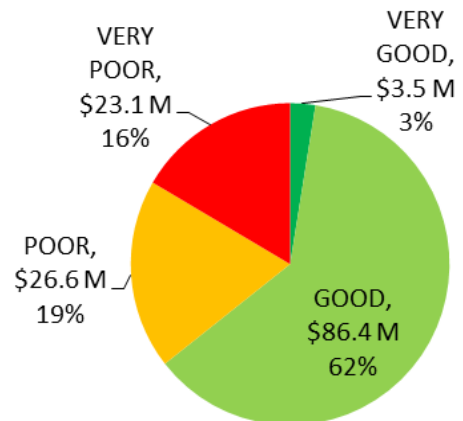
Transit Facilities



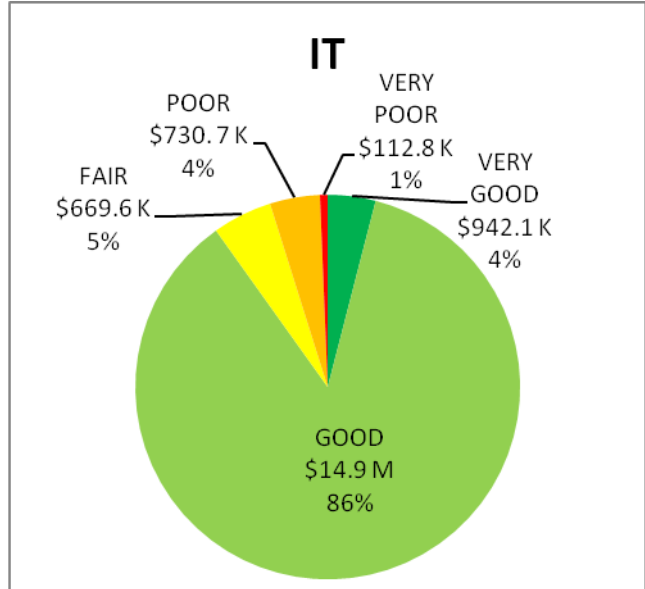
Surplus Facilities



Administrative Facilities



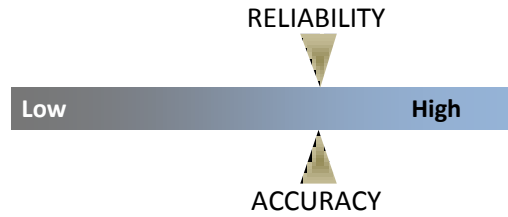
Approximately 90% of the City's **Business Solutions Development and Support (IT)** assets are in **Fair to Very Good** condition with the remainder approaching the end of their expected useful lives. Minor investment may be needed in the short to medium term in order to keep city assets current with latest technology. The City's IT assets are overall in **Good** condition indicating that they are meeting current needs however ongoing needs analysis is regularly studied and considered.



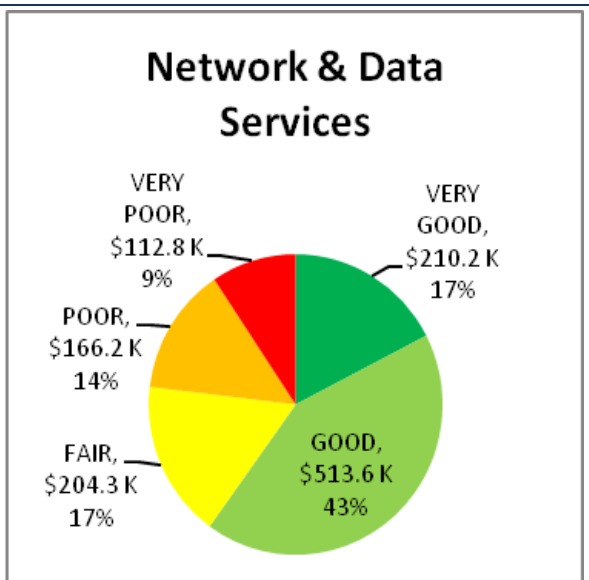
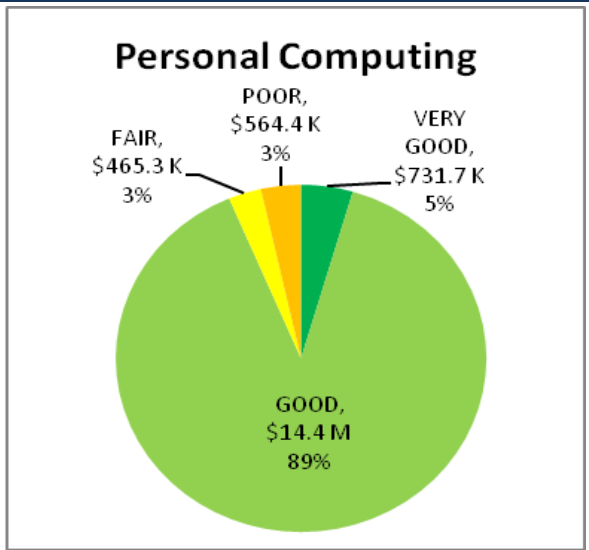
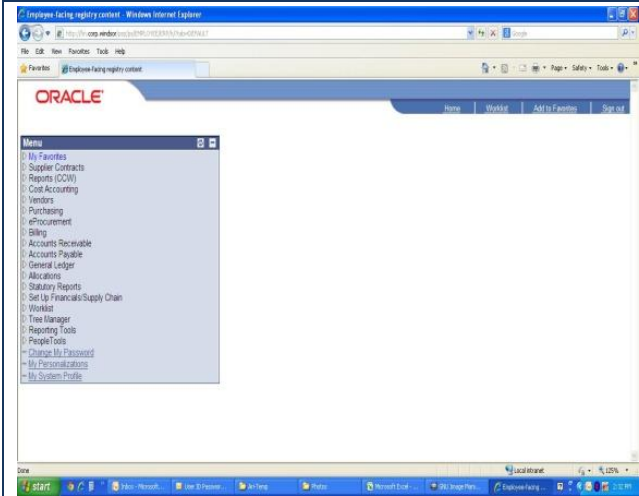
Overall Condition = Good

Data Confidence:

Data reliability is rated as above Average and the inventory is continually verified and updated. Personal computing equipment inventory is maintained in *City Wide TCA*, network and data services and applications inventories are managed on spreadsheets. Major applications are routinely upgraded to remain supported by the vendor. Policies for replacement of personal computing equipment and servers are in place and followed. As such condition, while subjective, is based on previously defined standards and best practices. There are several applications which are not included in this report as they do not meet TCA thresholds. Consideration of how to expand the scope of these assets to include them in future version will be reviewed.

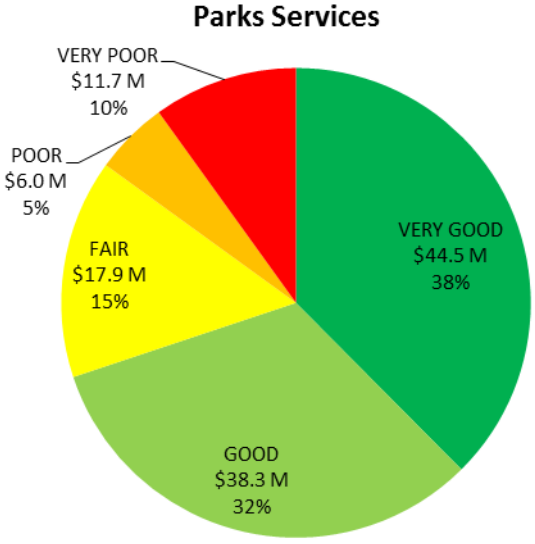


Information Technology



<b>Environmental Protection Parks Services</b>	<b>Replacement Value: \$118.65M</b>	<b>Depreciated Value: \$55.36M</b>
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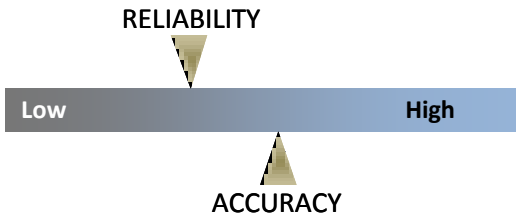
Over 70% of the City's Parks Services assets are in Good to Very Good condition, with the remainder approaching the end of their expected useful lives, indicating a need for investment in the short to medium term. The City's Parks Services assets are overall in Good condition, indicating that they are meeting current needs but aging and may require attention.



Overall Condition = Good

**Data Confidence:**

Data reliability for Parks Services is rated as below average. Inventory is based on what was initially collected for TCA purposes and any changes since. There is currently no application for park assets to manage and maintain the inventory, maintenance and condition information with the exception of the parks bridges that are inspected and rated by Public Works and tracked in *Hansen* CMMS. Overall, the majority of Parks Services assets, excluding playgrounds and parks bridges, have been rated subjectively therefore the accuracy of condition and investment forecast data may differ from actual needs. Overall accuracy is rated Average as there is a need for a solution to manage and maintain their information for consistency and continuity. This effort is sited in Section 7 as an initiative they intend to commence in 2014.

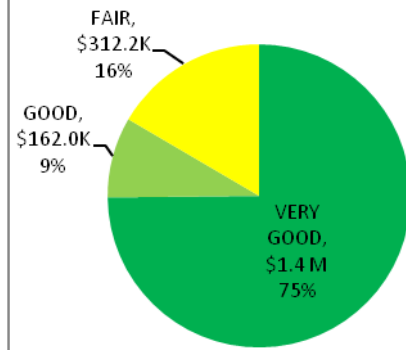




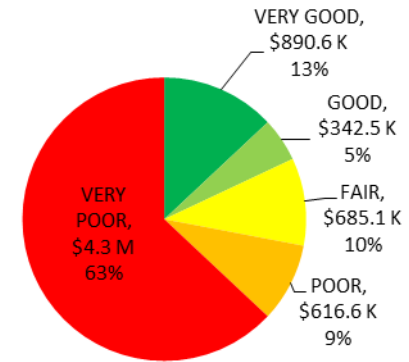
Environmental Protection Parks Services



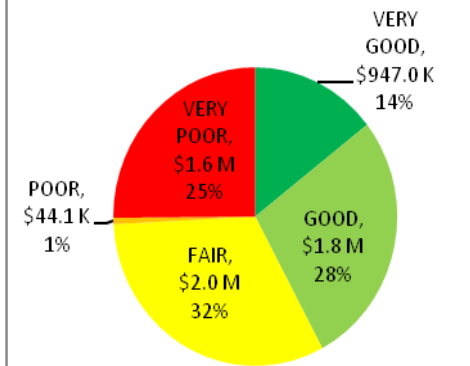
Parks Bridges



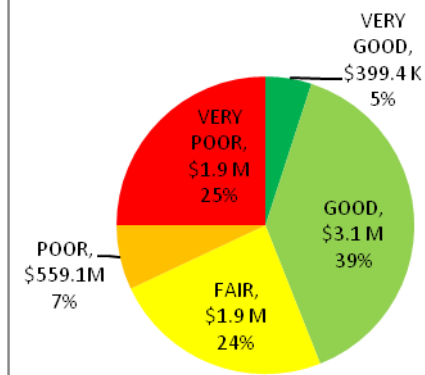
Parks Equipment



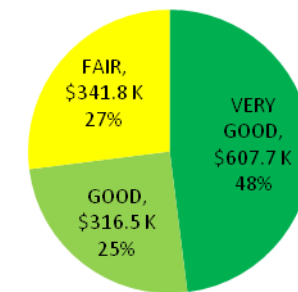
Sports Fields



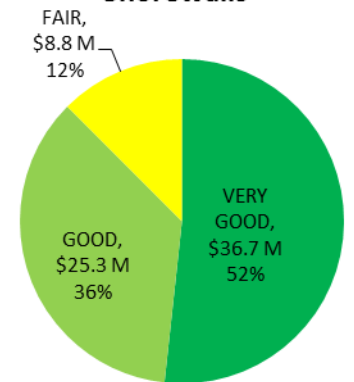
Parking Lots



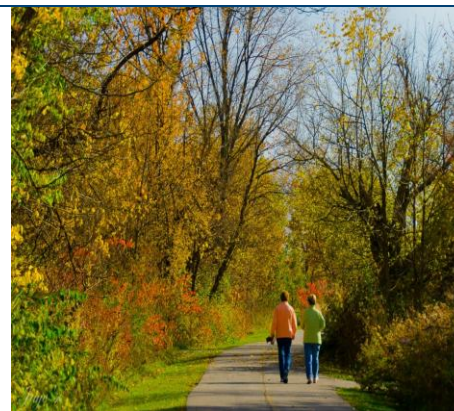
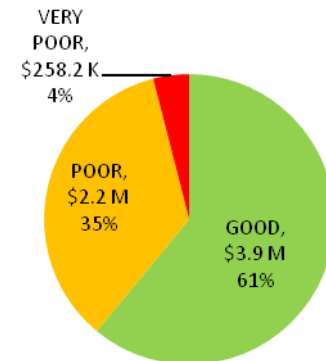
Spray Pads



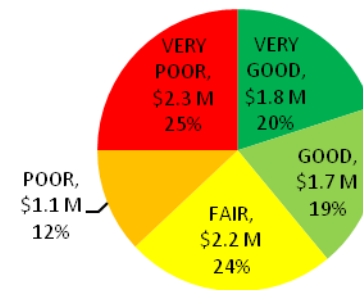
Shorewalls



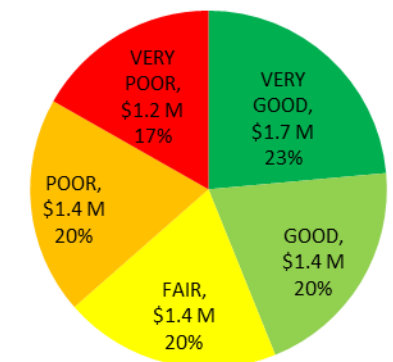
Fountains



Trails



Playgrounds





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## 3.10 Summary

When drawing a conclusion regarding the condition of the entire City of Windsor asset inventory, several key factors must be taken into account. The complexity of the various asset classes within the City of Windsor Corporate Asset Hierarchy and the degree to which they are objectively or subjectively rated can lead to misnomers when looking at the Corporation as a whole. The percentages of assets allocated to a certain condition grade were assessed based on replacement cost however for linear assets (roads, alleys, sidewalks, sewers) the linear measurement of the assets in each condition grade were used to determined more accurate reflection of the true asset overall asset condition.

All things considered, overall the City's assets are rated as Fair, but also over 50 % of the City of Windsor asset inventory is in a Good to Very Good condition. However this information must be taken cautiously given the number of core municipal assets that are in the final 20% of their expected lifecycle. Sewer linear assets and roads are particularly prone to age-based deterioration and could significantly alter the overall rating in subsequent years. Concurrently, given that wastewater and storm water collections systems comprise over 25% of the City's assets (by value) and to date are primarily subjectively rated and monitored, much care needs to be taken in the future to ensure objective analysis is obtained.

Future iterations of the City of Windsor AMP will continue to incorporate the most up to date objective information available. Emphasis will also be paid to updating all asset class databases with field inspection data and ratings synchronized with the Asset Planning Team's Corporate TCA database. Particular attention will be paid to:

- Obtaining objective CCTV ratings for the City's wastewater and storm water collection systems in order to properly assess the replacement timing and costs along with better understanding the risk associated with our aging buried infrastructure
- Developing a comprehensive plan for the management of condition ratings and replacement cost data for all Parks Services assets,
- Develop a means to identify and include the City owned assets identified in Section 2.5 included this AMP – art, heritage, horticulture, forestry, various park amenities, fire heavy equipment, street lights, metered parking lots, pay stations and land.
- Fully adhering to the City of Windsor Corporate Asset Hierarchy when reporting on all condition assessments
- The establishment of evaluation policies and schedules across all asset groups for the collection of 100% objective or engineering based condition data
- Annually updating the City's TCA database with the most recent condition assessments across the entire asset network
- Allocating an appropriate percentage of asset replacement value to be used for operations and maintenance activities on an annual basis. This will be determined through a detailed analysis of O & M activities and will be reported in future version of the AMP.
- Ensuring sustainability between the O & M activities and the average annual revenue required to operate and maintain our assets within an acceptable level of risk
- Developing a comprehensive needs versus performance rating system to ensure O & M activities reflect and adequately support the City's infrastructure reality
- Future AMP's being developed to a more detailed level within the Corporate Asset Hierarchy in order to provide the required level of detail with regard to condition and financial data. The level of detail being specific to each individual Service Area.

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Several key assumptions were made and a number of omissions were noted during the compilation of condition ratings:

- As stated in section 3.4, approximately 80% of the sanitary and storm sewer network was rated based on subjective analysis. The two criteria considered during this evaluation were age and pipe material type.
- For all other subjective ratings the process started with defining condition based on percentage of remaining useful life. The results were then vetted with experts in each asset type to determine if the age based result was reflective of actual observations and performance of the assets. In many instances the condition was upgraded from the age based result.
- Building condition information is based on a building as a whole. As stated previously this is not a true reflection of the actual needs in facilities. While some buildings may be overstated in a very poor condition others may be deemed good, yet a significant component of the structure, such as the roof, may be in very poor condition and not captured properly in this AMP. This is an area which can and should be improved over the next couple of years to provide a clearer understanding of the needs for this asset type.

Moving forward, it is the Asset Planning Division's intention to work with the various operational areas to assist them in producing Service Area Asset Management Plans, with a focus on enhancing objective condition availability. Condition data will continue to be uploaded annually to the TCA database based on the latest available information from the CMMS network. This is done with the intention of providing the best possible data available for making O & M decisions as well as aligning with all Provincial requirements and legislation.



## Section 4 Desired Levels of Service



## SECTION 4

# Desired Levels of Service

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Levels of service (LOS) are high level indicators comprising many factors that establish defined quality thresholds at which municipal services are supplied to the community. They support the organization's strategic goals and are derived from customer needs and expectations, Council objectives, City policies, legislative and regulatory requirements, standards, along with the financial capacity of the municipality to deliver those levels of service.

Initially the aim is to understand what the current LOS is for each of the Service Areas. At present, without a fully documented suite of LOS measures, there may be a difference in understanding across the City and for the citizens of Windsor, with regard to what the actual LOS performance is, and often this results in a higher expectation of the service than is actually being delivered. This is the distinction between actual (or current) LOS and target (or desired) LOS.

Levels of Service can be used:

- To inform customers of the proposed type and LOS of service to be offered;
- To identify the costs and benefits of the services offered;
- To assess suitability, affordability and equity of the services offered;
- As a measure of the effectiveness of the asset management plan
- As a focus for the asset management strategies developed to deliver the required level of service

As the City establishes its desired LOS, it needs to review the key factors involved in the delivery of that service, and the interactions between those factors. In addition, it is important to utilize a number of key performance metrics and track them to gain a better understanding of the current LOS supplied.

Within this first AMP, key factors affecting LOS are outlined along with example key performance indicators for each Service Area. These form part of the framework for the municipality, which forms the basis of the future desired LOS for each of the Service Areas.

## 4.1 Key Factors Influencing Windsor's Levels of Service

In developing the City's LOS measures to date, we have taken into account a broad range of factors including the following:

- Strategic Goals
- Legislative and Regulatory requirements along with City Policies
- Current state of assets
- Community Expectations
- Affordability

### 4.1.1 Strategic Goals

The City's LOS are founded upon the City's strategic goals and Council Objectives. These spell out what the City wants to become, how it's going to get there, and helps decide how and where to allocate resources, ensuring alignment to the strategic priorities and objectives. This helps identify priorities and guides how municipal tax dollars and revenues are spent into the future. The vision for the City of Windsor is dependent upon its infrastructure and people, and therefore the desired LOS provide tangible measures of how the City is progressing towards its goals



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#### **4.1.1.1 Legislative and Regulatory Requirements Along with City Policies**

A number of the City's Levels of Service measures are directly related to legislative and regulatory requirements and standards. For instance, Building Codes, and the *Accessibility for Ontarians with Disabilities Act* are legislative requirements which needed to be reflected in levels of service measures and therefore drive investment in certain areas. Similarly for environmental standards connected with the Water Reclamation Plant. Although not a mandatory regulation, the *Minimum Maintenance Standards* for municipal highways has also increased maintenance, inspection, and record-keeping standards. The City also has in place a number of approved policies and standards, for example regarding snow and ice removal or for maintaining the City's roads at a certain standard and these too will be reflected in LOS measures.

#### **4.1.2 Current State of our Assets**

The current LOS that the citizens of Windsor experience, are largely influenced by the current state of the asset base, along with performance and limitations with regards to safety, capacity and the level of redundancy that is built into the asset network. Therefore regardless of what the desired LOS are, the current asset base can only support a certain LOS. The City is currently working towards better defining what the current LOS are for each of the Service Areas.

#### **4.1.3 Community Expectations**

Community expectations have a direct impact on the City's desired LOS. Based on the citizen's experience of the service provided within the City, when compared to other Cities, there may be an expectation that the service should be higher, but this may not be possible based on the current assets condition and capability. This can equally apply within the City, where there can exist examples of LOS differing significantly depending on the location within the City. Community perceptions can also be driven by very localized asset failures e.g. poor sections of road, however these deficiencies may only apply to a small proportion of the population and the City as a whole may be performing relatively well. Therefore, moving forward it is not only important that the public is fully consulted with regard to LOS choices, but also that they become better educated with regard to the associated costs of maintaining or improving service levels and in this way they will be better informed on what is the right LOS for the City.

#### **4.1.4 Affordability**

Availability of finances and willingness to pay will ultimately control all aspects of the desired level of service for the City of Windsor. Ideally funds would be available to achieve all of the City's goals, meet legislative requirements, meet community expectations and at the same time address the aging asset stock across the City. However with an aging asset base and the need to invest more in our existing assets just to maintain service, any potential increases in LOS will need to be assessed against the risks associated with our existing assets and the funding mechanisms available. Moving forward the aim of the Asset Management Program is to more accurately assess the costs associated with maintaining current service levels, both with regard to Capital and Operating costs, and to better understand the true costs of service level increases and conversely the potential savings that could be made by lowering certain LOS. This information can then be shared with the public and will be the basis for further informed discussions on desired LOS.

### **4.2 Performance Measures and Targets**

Performance measures or key performance indicators (KPI's) are the primary tool used to track LOS. For these to be effective we have made these specific, measurable, achievable and relevant for each Service Area across the City. In developing these KPI's there is always a balance between having too many measures, resulting in data overload and lack of clarity, which can make it difficult to focus on those of highest importance, but at the same time having sufficient measures to enable a focus on the key aspects of the asset management plan and those that will result in more efficient and effective service delivery.

To complement the implementation of the corporate KPI's, the City also believes in supplementing internal performance measures with other reliable performance indicators. As the City's corporate KPI

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initiative accelerates forward through its various growth and development stages, performance is also being tracked through the use of several other reliable data sources such as OMBI (Ontario Municipal Benchmarking Initiative) and 311 feedback databanks. OMBI in particular has been a tremendous tool in allowing the City of Windsor to establish a framework with which we can accurately gauge service area performance levels in a timely and efficient manner. By benchmarking our performance levels with comparable municipalities across the province, the City is providing unparalleled levels of accountability and transparency within its various service areas. Windsor is also on the leading edge in establishing and implementing a comprehensive 311 system to help serve the public and the many other users of its corporate-wide infrastructure. This service is critical in not only allowing City leadership and service areas to relay information to the public and end-users, but also provides critical feedback on the actual performance of city-wide service delivery. This feedback in turn, allows service groups to customize or personalize their delivery systems and methods to best meet the needs of both municipal staff and the general public.

Moving forward the City will continue to develop its approach to defining LOS, through leveraging current efforts in OMBI and the Corporate Strategic Action Plan (CSAP), to create a consistent LOS framework for use across all Service Areas. This framework will include Customer LOS, which relates to how our community receives the service in terms of: safety; quality; quantity; reliability; responsiveness; cost/efficiency and legislative compliance. Supporting the Customer LOS are operational or technical measures of performance developed to ensure that the minimum Customer LOS are met. These technical measures relate to service criteria such as: condition; failure rates, cost effectiveness, etc.

The aim will be that current performance will be monitored for both Customer and Technical LOS and that targets will also be developed for both the Customer and Technical LOS and will be included in future updates of this Plan.

Detailed below are examples of the current performance measures in use by the City. It is important to note that for purposes of clarity and accuracy; corporately established KPI's are only available for specific service areas and for specific years. Because some service groups provide services that are so large and intricate in size and scope, it is best to incorporate primarily OMBI statistics until the level of confidence in internal KPI data is acceptable. For example, the transportation and water treatment services are much too complex and it would take significant amounts of time to properly collect and analyze end-user level service delivery data. OMBI statistics and 311 data are also widely reported to and accepted by the City's executive leadership and Council so familiarity and confidence in data accuracy is already established. Moving forward the intention is to have the corporate KPI's drive the performance measurement system however for the purposes of the 2013 AMP; OMBI stats would be the most relevant. For 2014 and beyond, a much more internal KPI centric version of performance delivery reporting will be presented as accurate data becomes more readily available. As such the tables below reference primarily 2012 OMBI statistics and incorporate internal KPI's when the data is sufficient and accurate. When internal KPI data is not available for a specific service area, a table will still be included to show the various performance indicators that will be reported on in future years.

## 4.2.1 Transportation Services

### 4.2.1.1 Scope of Services

The transportation infrastructure enables the City to deliver transportation and pedestrian facility services and give people a range of options for moving about in a safe and efficient manner including:

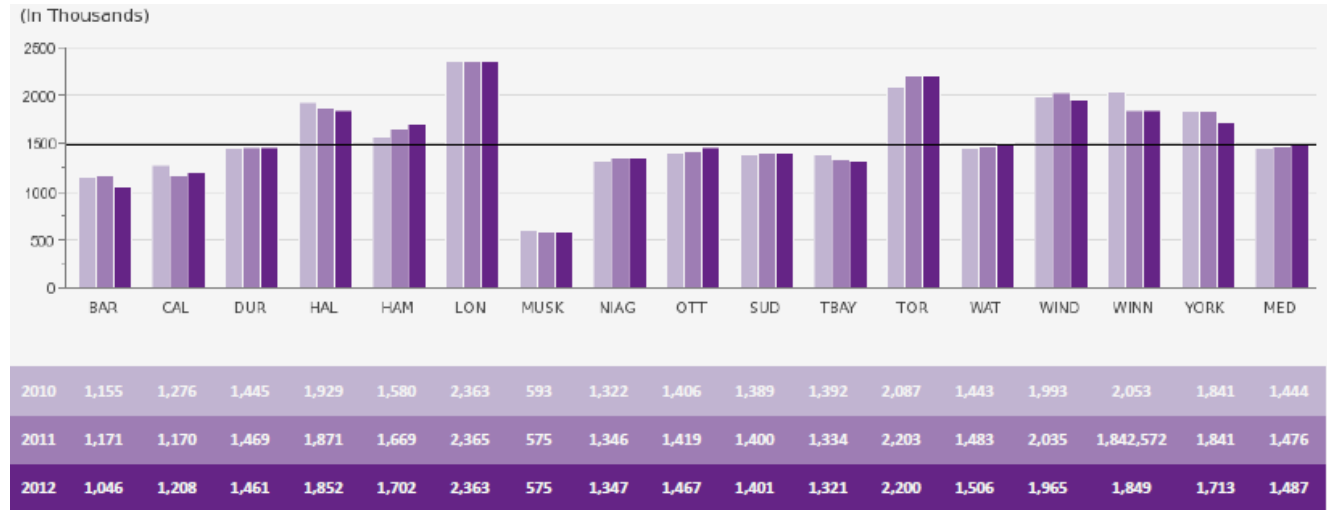
- **Movement** – providing for the movement of people and goods
- **Access** – providing access to residential, commercial, and industrial properties and other community amenities
- **Recreation** – providing for recreational use in Right of Ways for activities such as walking, cycling, or special events such as parades

## 4.2.1.2 Example Key Performance Indicators

TABLE 4-1—EXAMPLE ANNUAL KEY PERFORMANCE INDICATORS

Performance Indicators (Reported Annually)	
How much did we do?	Lane kilometres
How well did we do it?	Road adequacy percentage of paved lane kilometres rated good or very good
Is anyone better off?	Vehicle collision rate

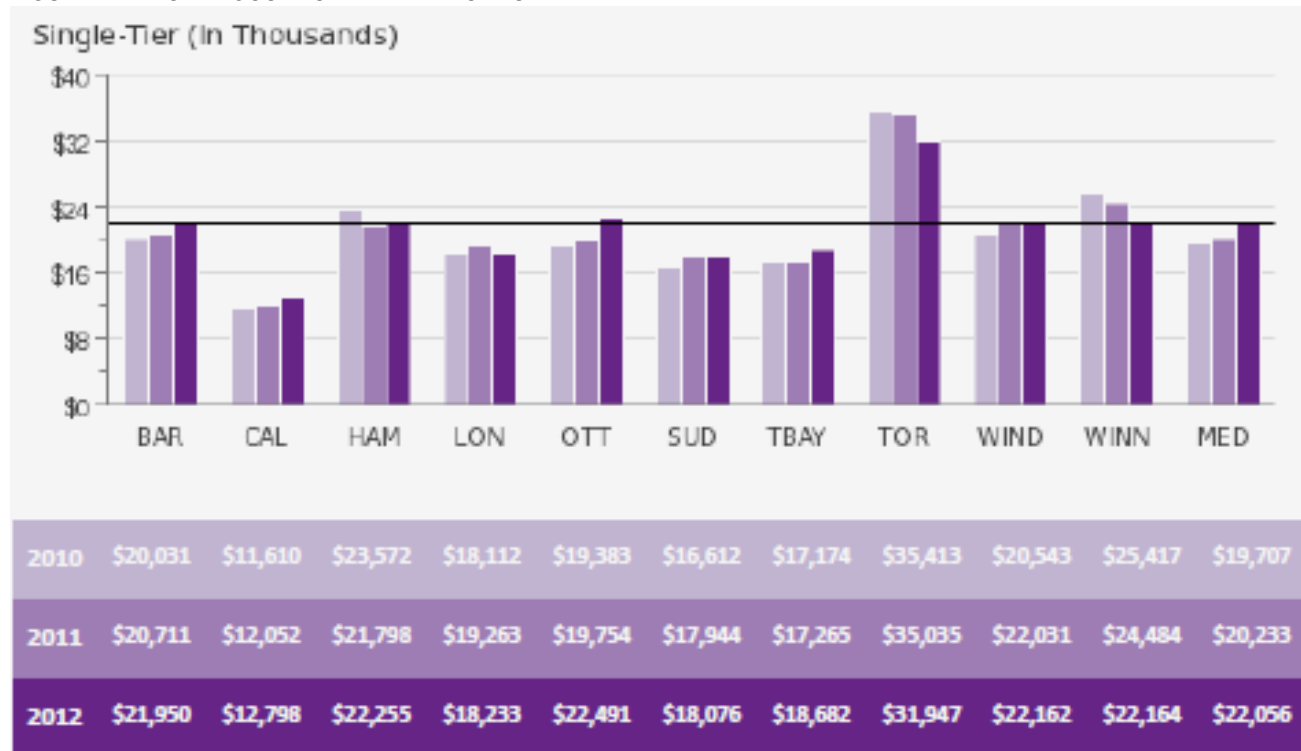
FIGURE 4-1—VOLUME OF TRAFFIC TRAVELLING ON MAIN ROADS



Source: ROAD112 (Community Impact)

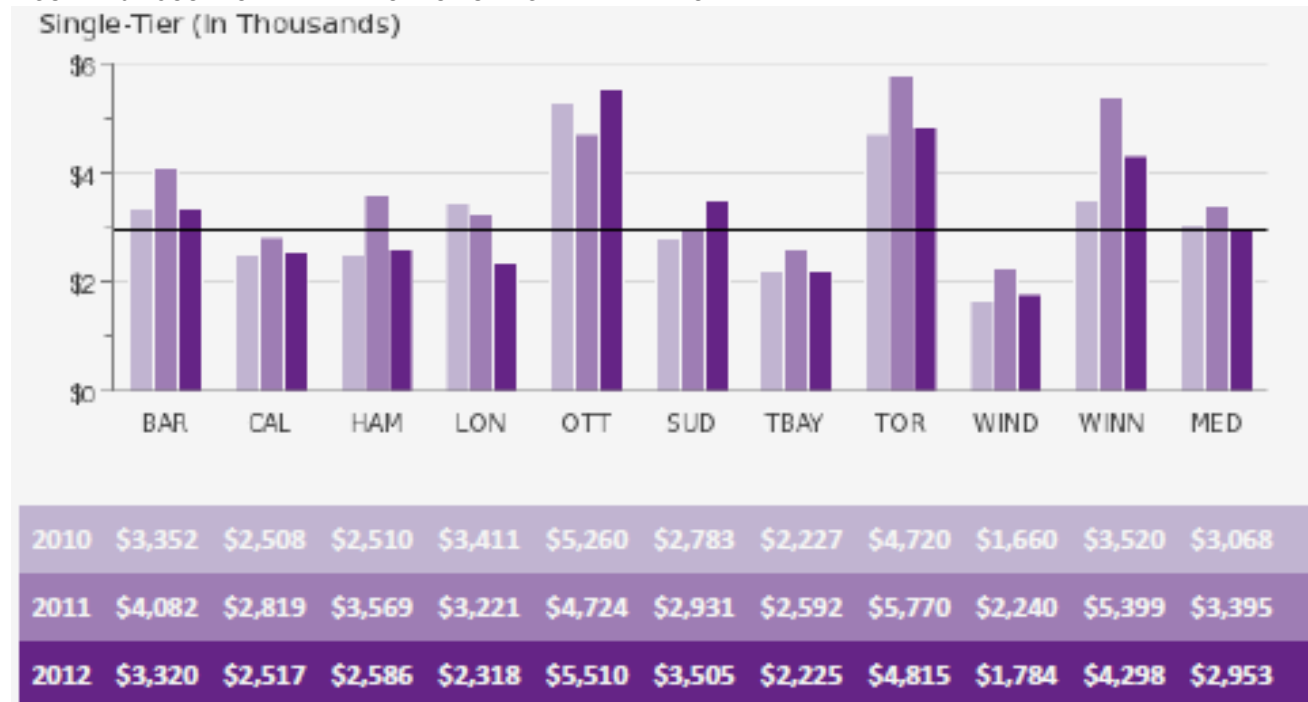
Comment: The measure indicates the number of times, *in thousands*, that a vehicle travels over each lane kilometer of road and demonstrates road congestion.

FIGURE 4-2—TOTAL COST TO MAINTAIN ROADS PER LANE KM



Source: ROAD308T (Efficiency)

**FIGURE 4-3—COST TO MAINTAIN ROADS DURING WINTER PERIOD**



Source: ROAD903 (Efficiency)

Note: Winter maintenance includes plowing, sanding, salting and pre-treating roads for hazardous conditions.

## 4.2.2 Environmental Protection—Storm Water & Wastewater

### 4.2.2.1 Scope of Services

The Environmental Protection infrastructure network enables the City to deliver wastewater and storm water collection services to all the residents of the municipality, including:

- The removal of wastewater through a collection network of sanitary sewer mains
- The treatment of wastewater flows and discharge back to the water environment
- The removal of storm water through a collection network of storm sewer mains, municipal drains, roadside ditches and catch basins

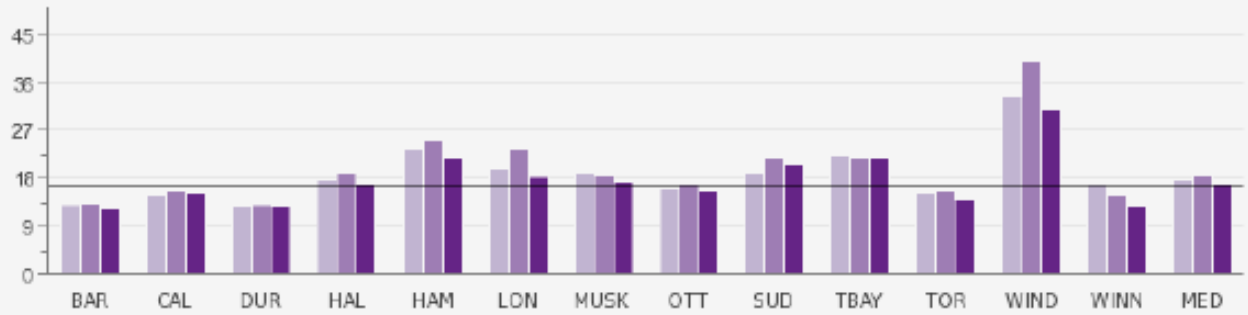
### 4.2.2.2 Example Key Performance Indicators

**TABLE 4-2—ENVIRONMENTAL SERVICES KEY ANNUAL PERFORMANCE INDICATORS**

Performance Indicators (Reported Annually)	
<b>Sanitary Network</b>	
How much did we own?	Total wastewater treated per 100,000 population (in ML)
How well did we do it?	Percentage of total bypassed wastewater
Is anyone better off?	Cost of treatment per /ML
<b>Storm Network</b>	
How much did we own?	Kilometres of storm water drainage network
How well did we do it?	Percentage of sewers that are separated
Is anyone better off?	Number of flooding complaints per ml of annual rainfall

**FIGURE 4-4—AMOUNT OF WASTEWATER TREATED (MEGALITRES PER 100,000 POPULATION)**

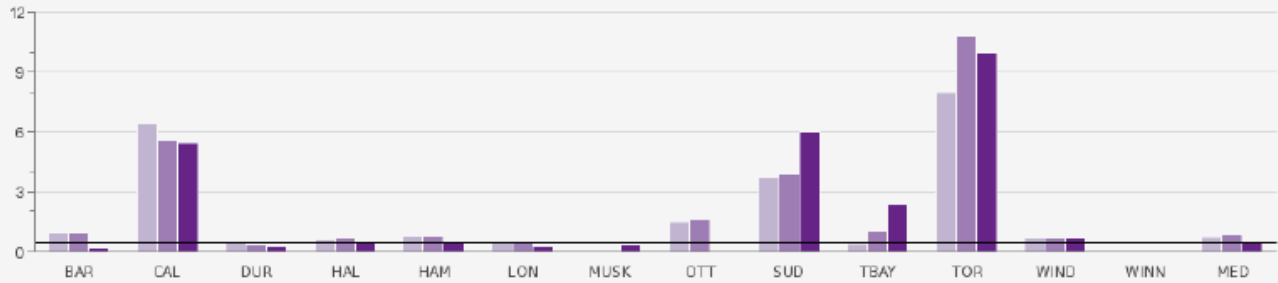
Integrated Systems (In Thousands)



2010	13,021	15,097	12,759	17,810	23,351	19,868	18,987	16,161	19,164	22,607	15,286	33,407	16,944	17,810
2011	13,250	15,793	13,211	19,224	25,261	23,583	18,770	16,648	21,760	21,741	15,738	40,066	15,231	18,770
2012	12,252	15,272	12,724	16,778	21,762	18,347	17,436	15,641	20,754	21,636	13,913	31,269	12,789	16,778

Source: WWTR210 (Service Level)

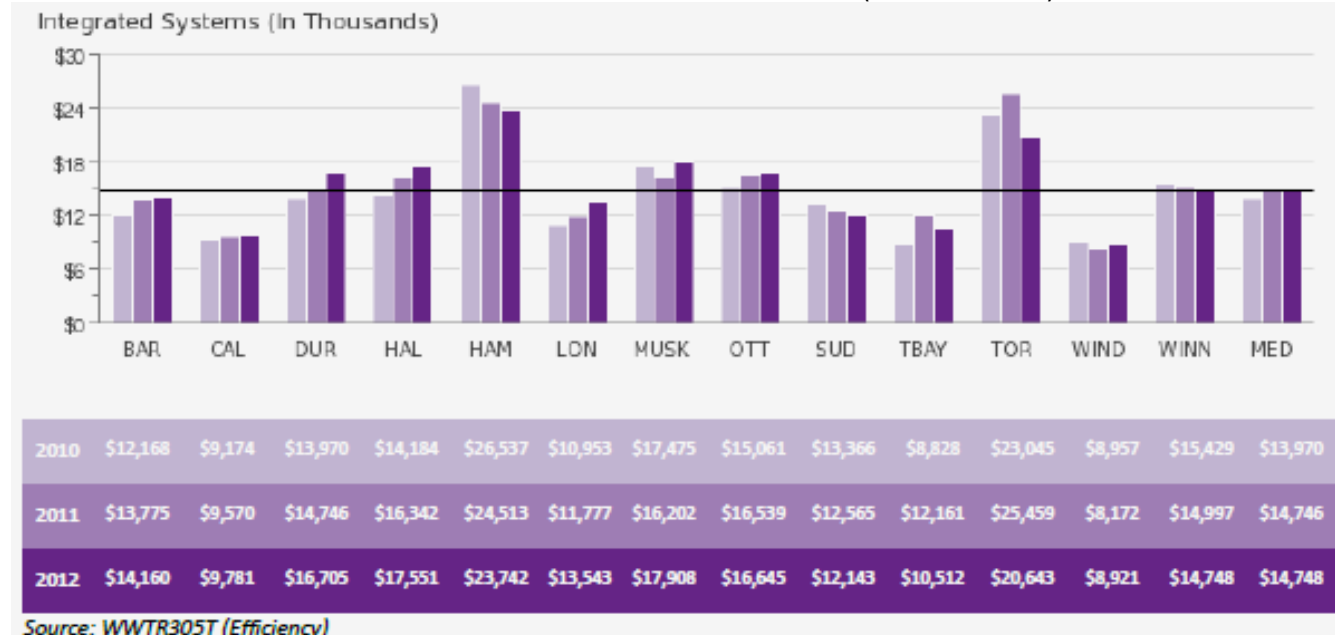
**FIGURE 4-5—NUMBER OF WASTEWATER MAIN BACKUPS (PER 100 KM OF MAIN)**



2010	0.93	6.42	0.54	0.56	0.81	0.51	0.00	1.46	3.77	0.39	8.01	0.69	N/A	0.75
2011	0.94	5.57	0.34	0.67	0.80	0.43	0.00	1.62	3.90	0.98	10.79	0.69	N/A	0.87
2012	0.19	5.42	0.24	0.49	0.45	0.23	0.32	0.01	5.97	2.35	9.96	0.69	N/A	0.47

Source: WWTR405M (Customer Service)

**FIGURE 4-6—TOTAL COST OF WASTEWATER COLLECTION AND CONVEYANCE (PER KM OF PIPE)**



## 4.2.3 Corporate Fleet Management

### 4.2.3.1 Scope of Services

The corporate fleet infrastructure provides the necessary vehicle and equipment to enable various City departments to deliver much needed services to the public and residents of the municipality. Corporate Fleet services include:

- Acquisition, maintenance, repair, disposal , and management of the corporate fleet
- Provision of services to outside agencies as applicable
- Fuel management services in the supply and availability of fuel and the operation of fuel sites managed by the Fleet Division
- Materials management, motor pool, and specialized services

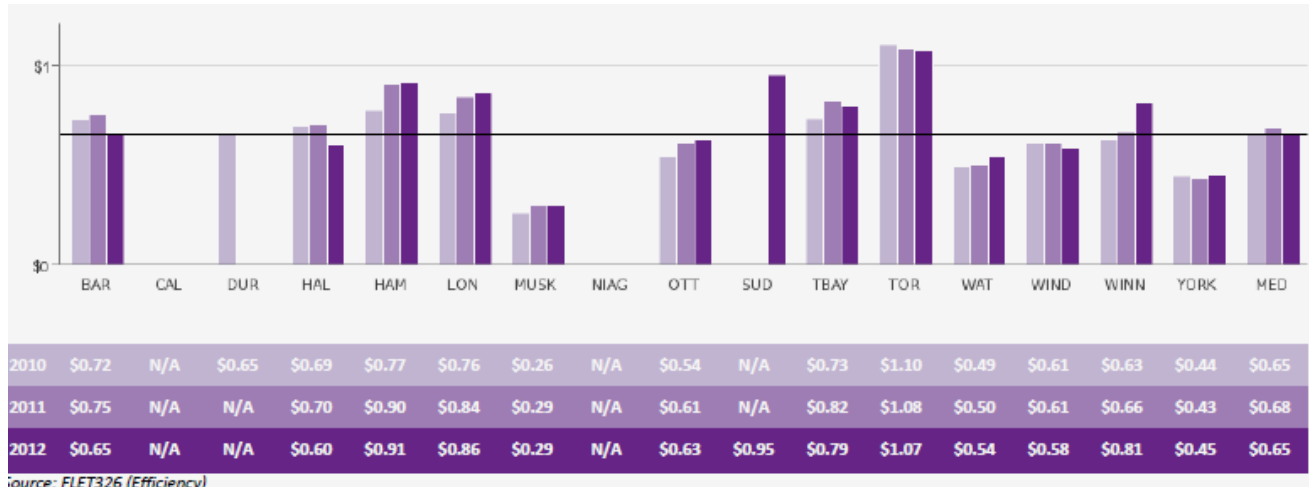
### 4.2.3.2 Key Performance Indicators

**TABLE 4-3—CORPORATE FLEET MANAGEMENT ANNUAL KEY PERFORMANCE INDICATORS**

Performance Indicators (Reported Annually)			
Measure Name	Measure Description	2009	2010
How Much Did We Do?	Number of vehicles in fleet	324.00	298.00
How Well Did We Do It?	Percentage of vehicles serviced within 48 hours (any type of repairs)	0.75	0.73
Is Anyone Better Off?	Service request rate (percentage of work orders that are repairs)	0.88	0.90

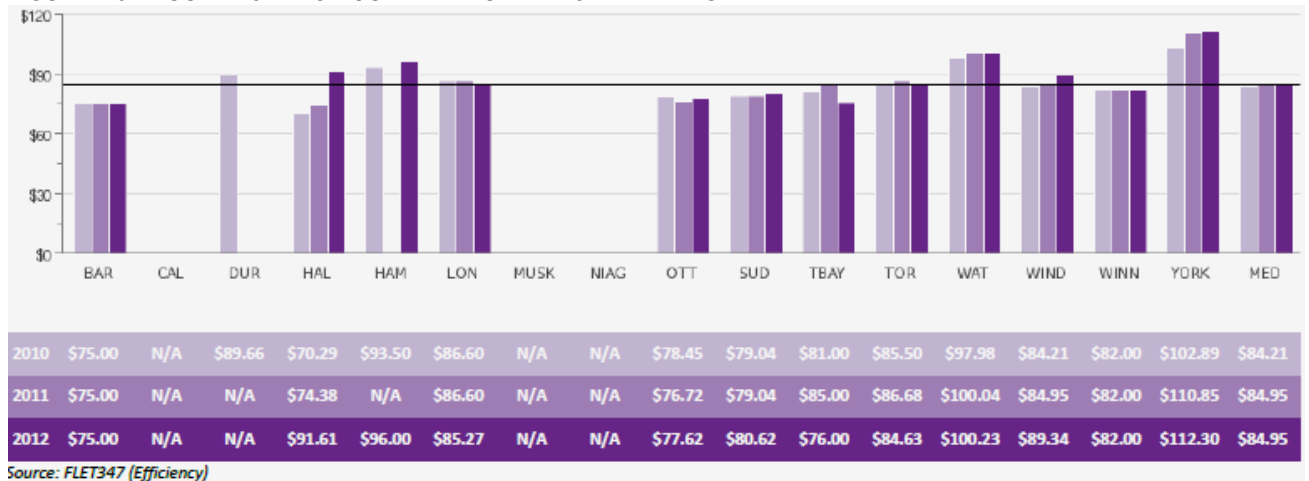


**FIGURE 4-7—OPERATING COST PER VEHICLE KM**



Source: FLET326 (Efficiency)

**FIGURE 4-8—HOURLY CHARGE-OUT RATE FOR VEHICLE REPAIRS**



Source: FLET347 (Efficiency)

## 4.2.4 Corporate Facilities Management

### 4.2.4.1 Scope of Services

This very critical infrastructure enables various City departments to deliver much needed services to the residents of the municipality as well as provide a safe and welcoming environment for members of the community to gather.

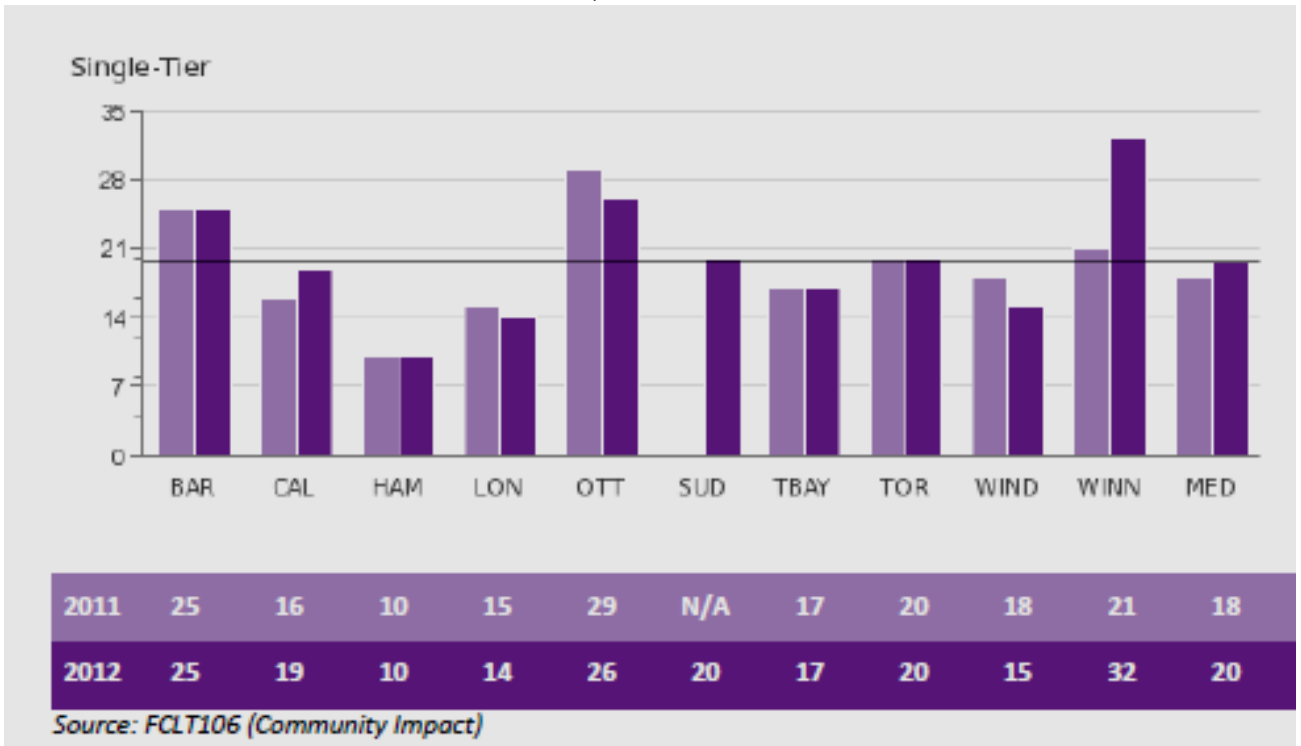
- Properly manage, maintain and acquire buildings and facilities for the use of all City departments, necessary outside agencies and the general public

#### 4.2.4.2 Key Performance Indicators

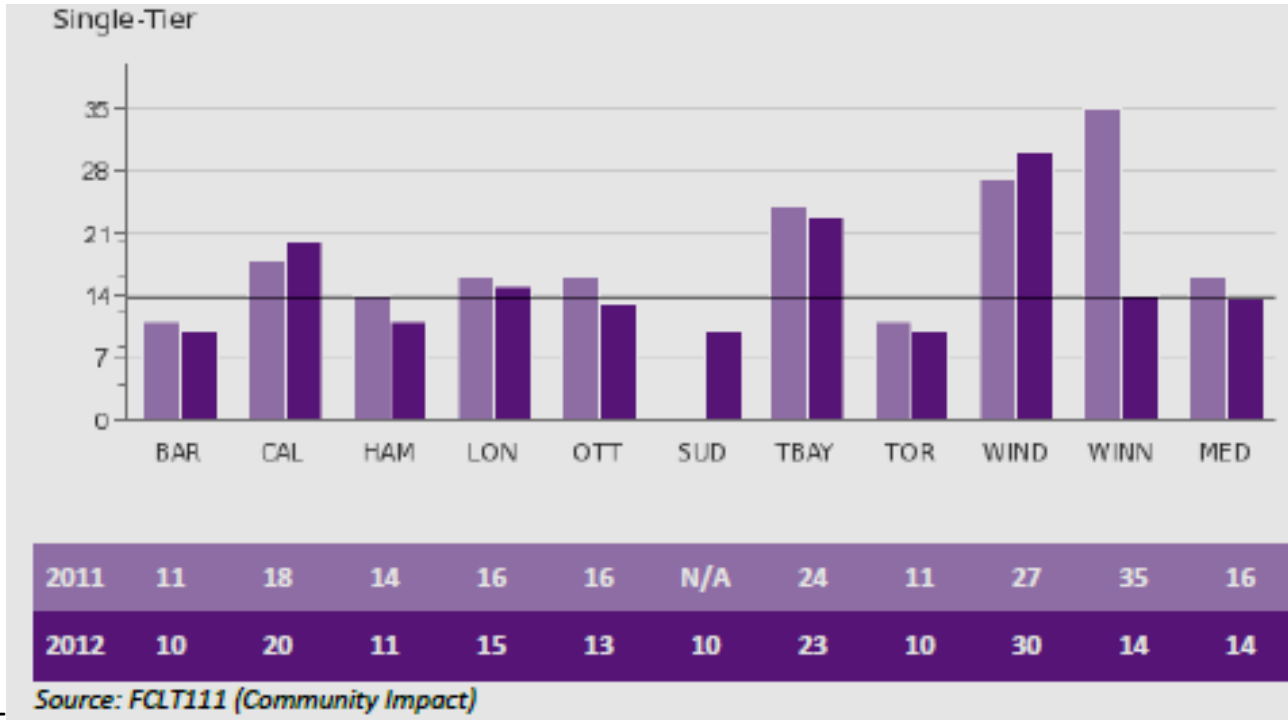
TABLE 4-4—CORPORATE FACILITIES MANAGEMENT KEY ANNUAL PERFORMANCE INDICATORS

Performance Indicators (Reported Annually)				
Measure Name	Measure Description	2009	2010	2011
How Much Did We Do?	Total Square feet of facilities managed	986,508.00	978,008.00	978,008.00
How Well Did We Do It?	Operating cost (program service based budget) per square foot			5.74
Is Anyone Better Off?	Average number of days to complete a work order			12.00

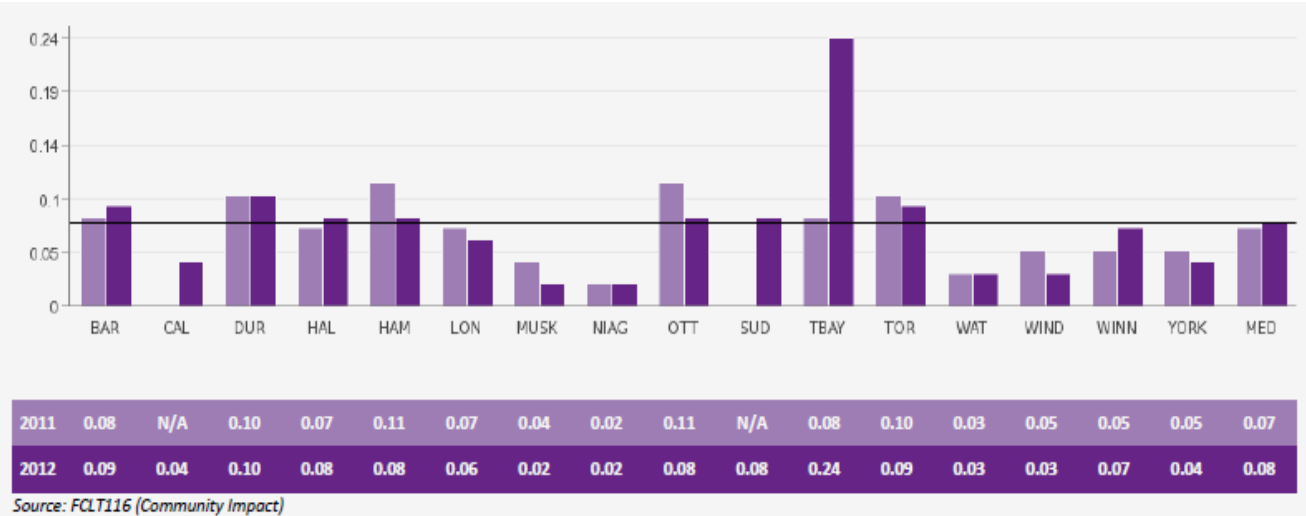
FIGURE 4-9—ELECTRICITY CONSUMPTION FOR HEADQUARTER BUILDINGS



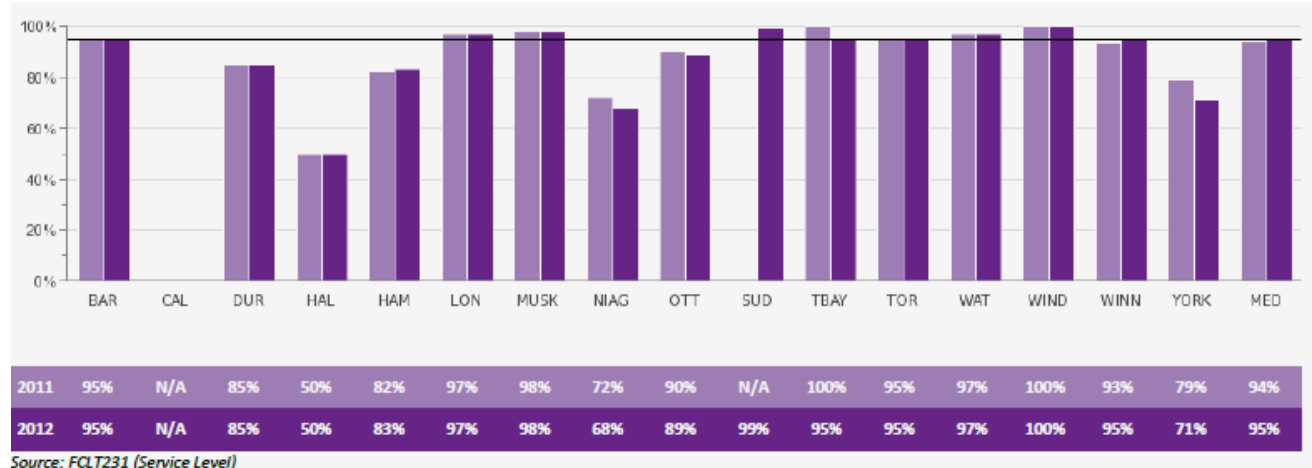
**FIGURE 4-10—NATURAL GAS CONSUMPTION FOR HEADQUARTER BUILDINGS**



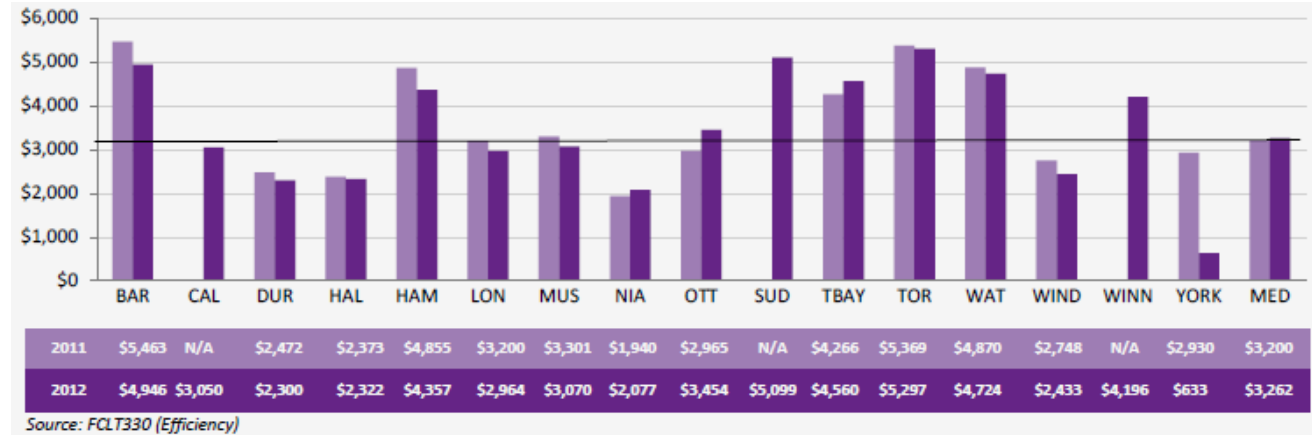
**FIGURE 4-11—WATER CONSUMPTION FOR HEADQUARTER BUILDINGS**



**FIGURE 4-12—PERCENTAGE OF BUILDINGS THAT ARE OWNED**



**FIGURE 4-13—COST TO MANAGE HEADQUARTER BUILDINGS**



## 4.2.5 Business Solutions Development & Support (IT)

### 4.2.5.1 Scope of Services

The Business Solutions Development & Support infrastructure network plays a critical role in allowing all City departments systems to function properly and efficiently. Ultimately this will allow the corporation to operate as effectively as possible while delivering on time and much needed services to all municipal workers and community members. Services include:

- The proper maintenance, refurbishment and acquisition of all corporate hardware and software
- The proper maintenance of all network infrastructure assets including computing servers and telephone systems

## 4.2.5.2 Key Performance Indicators

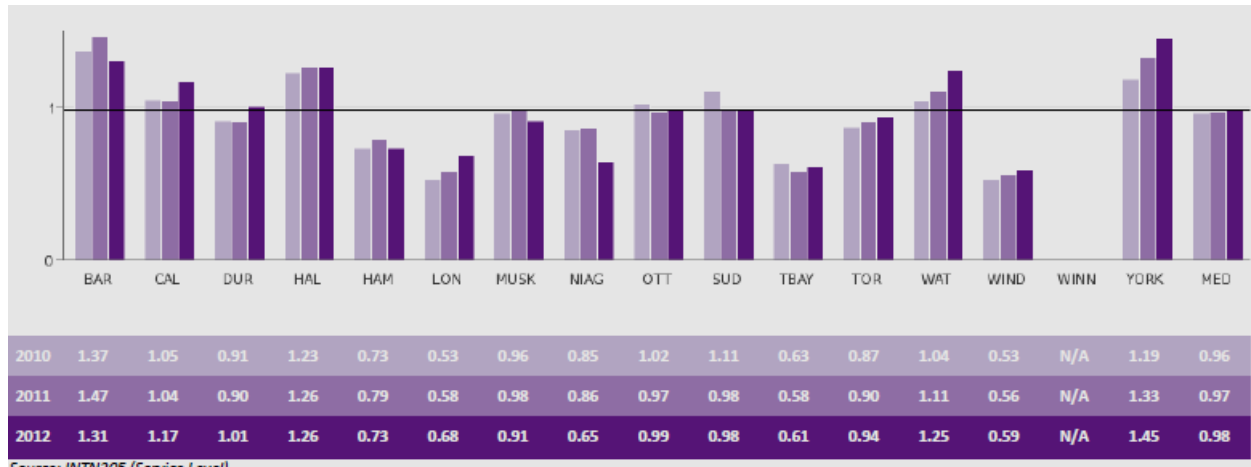
TABLE 4-5—IT ANNUAL KEY PERFORMANCE INDICATORS

Performance Indicators (Reported Annually)				
Measure Name	Measure Description	2009	2010	2011
How Much Did We Do?	Total time on projects and support for AMANDA and Peoplesoft per year (in hours)		17,526.00	36,440.00
How Well Did We Do It?	Time per issue on AMANDA and Peoplesoft (in hours)		6.00	5.00
Is Anyone Better Off?	Total number of website visits	3,561,726.00	3,803,373.00	3,838,975.00

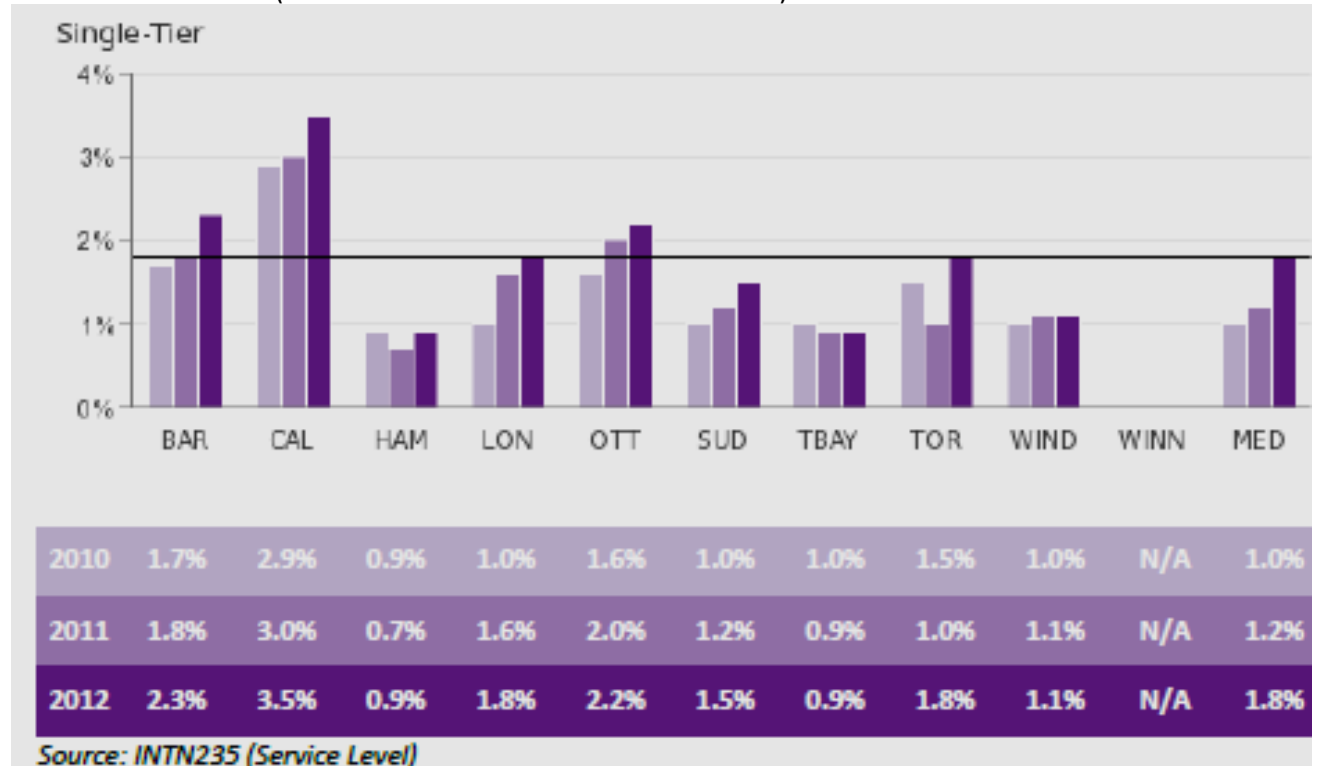
TABLE 4-6—IT ANNUAL KEY PERFORMANCE INDICATORS

Performance Indicators (Reported Annually)				
Measure Name	Measure Description	2009	2010	2011
How Much Did We Do?	Amount of data per number of active accounts			12.17
How Well Did We Do It?	Program Service Based Budget per active account		1,334.55	1,079.61
Is Anyone Better Off?	Website uptime percentage	99.88	99.80	99.80

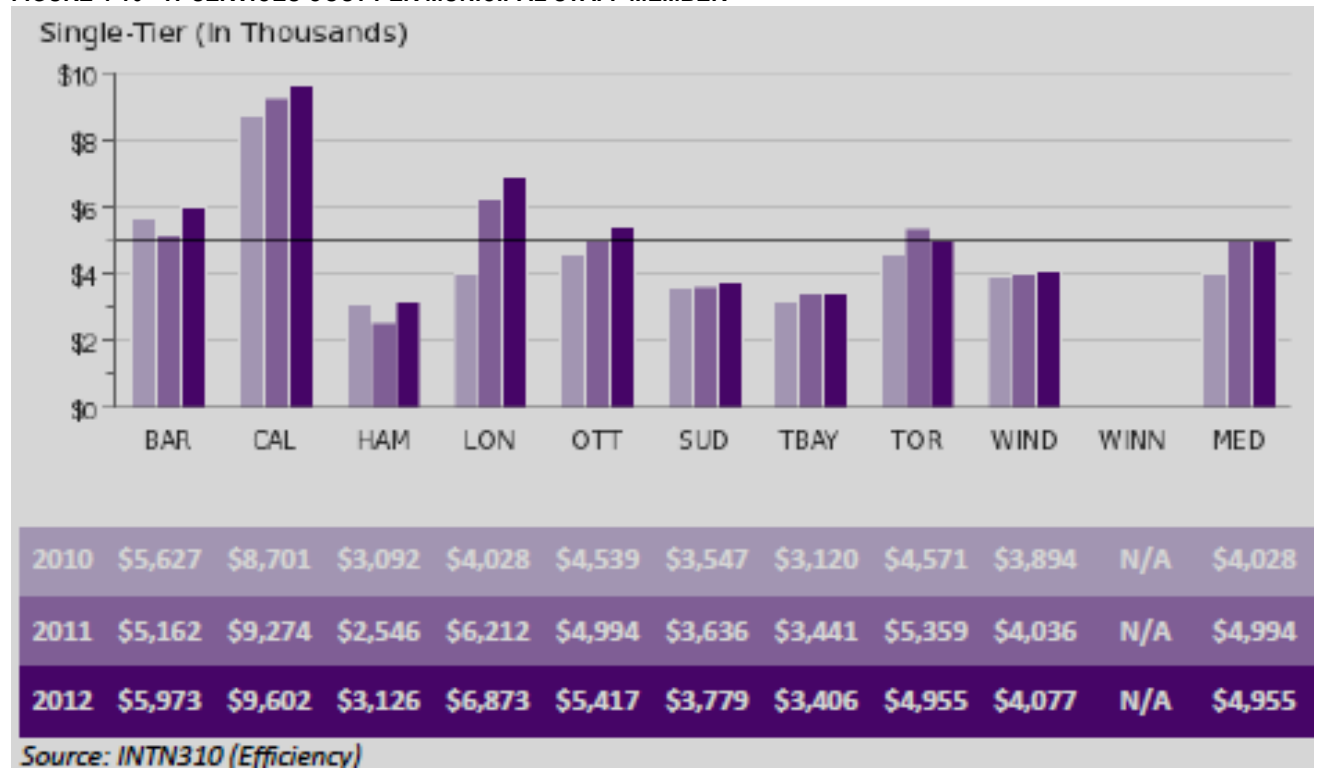
FIGURE 4-14—AVG. NUMBER OF IT DEVICES PER EMPLOYEE



**FIGURE 4-15—PERCENT (OF OPERATING AND CAPITAL EXPENDITURES) OF INVESTMENT FOR IT SERVICES**



**FIGURE 4-16—IT SERVICES COST PER MUNICIPAL STAFF MEMBER**





## 4.2.6 Parks and Natural Areas

### 4.2.6.1 Scope of Services

This unique infrastructure helps support other City departments as well as contribute to the overall beautification, health and well-being of the City and its residents. Services include:

- Properly manage and maintain all parks facilities for use by other City departments as well as the general public as a whole

### 4.2.6.2 Example Key Performance Indicators

TABLE 4-7—PARKS AND NATURAL AREAS KEY ANNUAL PERFORMANCE INDICATORS SUMMARY

Performance Indicators (Reported Annually)	
Measure Name	Measure Description
How Much Did We Do?	Hectares of park land
How Well Did We Do It?	Program service based budget per hectare of park land
Is Anyone Better Off?	Percentage of parks improved

FIGURE 4-17—PERCENTAGE OF MUNICIPALITY THAT IS PARKLAND

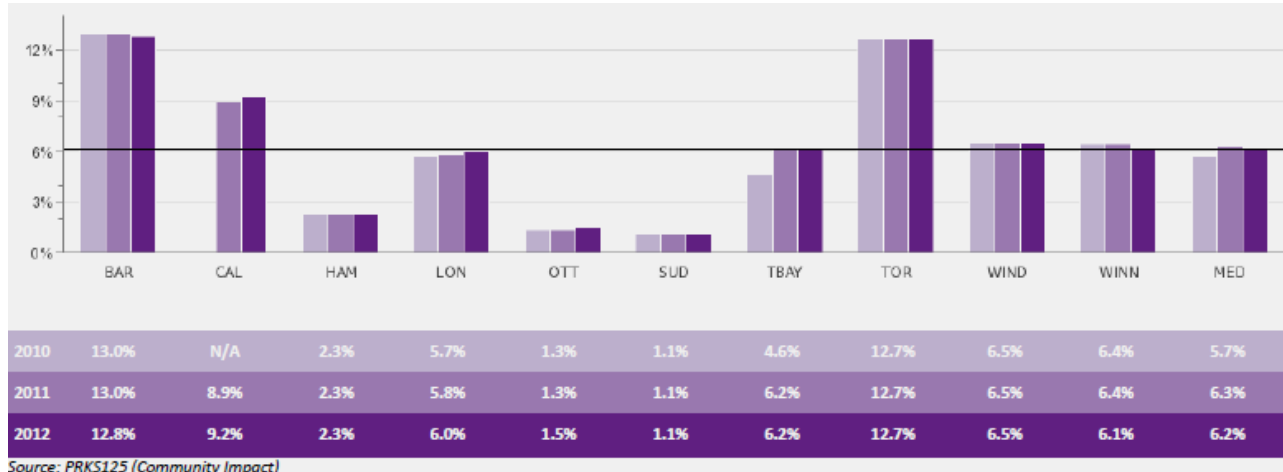
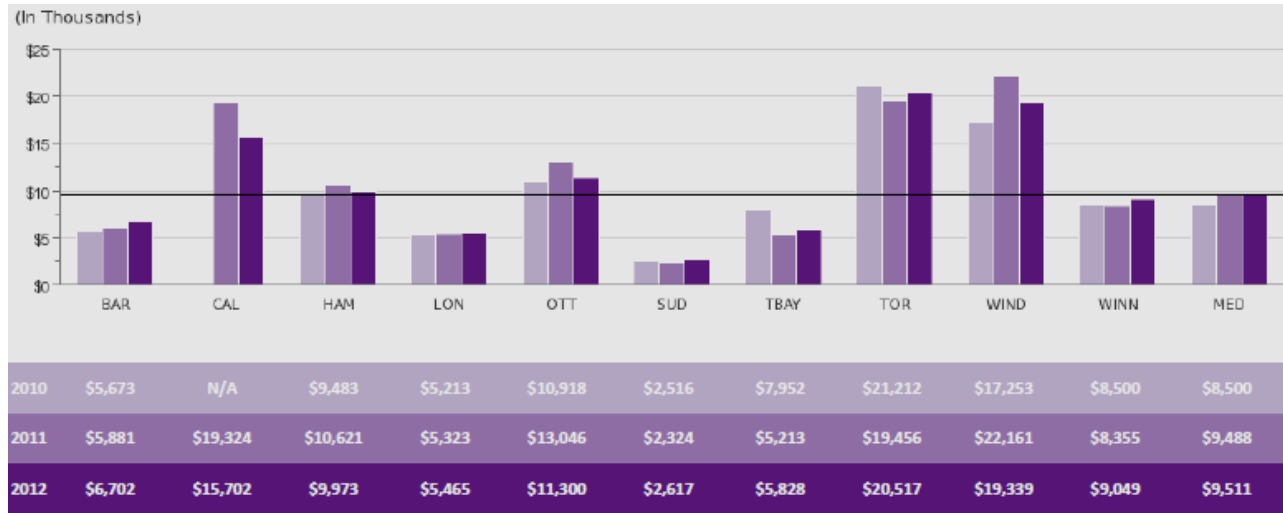


FIGURE 4-18—TOTAL COST PER HECTARE TO OPERATE PARKS








NOTE: Boulevards, forestry and skill trades are included in Windsor's OMBI cost number to date. This will be changed going forward in order to be comparable to other municipality's costs, which do not include these numbers.

## 4.2.7 Level of Service Summary Overview

An assessment of the current condition of the asset base along with a summary view on the associated LOS being delivered across the City is shown in Figures 4-19 and 4-20 below. Also shown are projections of the risk profile of the assets along with expected service trend. These trends are based on the current state of the asset base combined with the expected levels of funding over the next 10 years i.e. assuming that the future spending will be comparable with current funding levels. The trends shown reflect that many assets are nearing the end of their useful lives and that maintaining funding at current levels will likely not be sufficient to hold service levels at their current level. Windsor is not unique as the situation is pervasive across the province and indeed the country. While municipalities will have to certainly play a major role in addressing this deficit, they rely largely on one revenue stream (the property tax levy). Therefore, it is critical for the senior levels of government, which have a much more diversified revenue stream, to help fund an ongoing sustainable infrastructure program.

FIGURE 4-19—LEGEND OF TREND DESCRIPTIONS

SYMBOL	TREND	DESCRIPTION
	Negative Upward Trend	An upward trend represents a negative outcome for the City of Windsor e.g. higher risk to service delivery
	Positive Upward Trend	An upward trend represents a positive outcome for the City of Windsor e.g. improving LOS
	Negative Downward Trend	A downward trend represents a negative outcome for the City of Windsor e.g. declining LOS
	Positive Downward Trend	A downward trend for this category to service delivery represents a positive outcome for the City of Windsor e.g. lower risk to service delivery
	Consistent/ Stable Trend	No anticipated changes noted at this time

**FIGURE 4-20—OVERALL SUMMARY OF SERVICE AREA CURRENT AND PROJECTED LOS**

Service Area	Condition	Service Levels	Risk to Service Delivery	Projected Service Levels	Data Confidence
Transportation					
Environmental Protection - Water Reclamation					
Environmental Protection - Sanitary & Storm Sewers					
Corporate Fleet					
Corporate Facilities					
Information Technology (IT)					
Parks and Natural Areas					

### 4.3 Internal/External Trends with Potential to Impact Service

In addition to the impact of an aging asset base increasing the risk of service delivery failures, there are also a number of internal and external factors and trends that have the potential to impact on the ability of the City to continue to deliver established LOS over the Plan period.

Internal factors/trends include:

- Knowledge Retention – The City has an aging workforce and as staff retire, there is a risk that their knowledge is lost to the organization. This can result in either inefficient working as staff will take additional time to carry out tasks initially or this can result in a declining LOS, as asset failures may not be prevented or the response to an asset failure may not be dealt with as promptly as it had previously. To address this, the City is working towards more formal approaches to knowledge management and succession planning to manage this trend.
- The Ability to attract/retain staff – Many municipalities struggle to compete with industry with regard to retaining existing staff and attracting new staff. As a trend, it is becoming more difficult to attract younger staff into the City for a number of positions and this has the potential to impact on the City’s ability to continue to deliver LOS. The City will continue to monitor this trend.

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External factors/trends include:

- **New Legislation** – New legislation, e.g. tighter standards on vehicle emissions or improved accessibility standards for buildings, can potentially result in the existing City of Windsor assets not being able to meet the new desired LOS. To address this, the City has in place processes to monitor when and how future legislation can impact the asset base and, where possible, new assets are ‘future proofed’ where their design and construction takes into account the potential impact of new legislation. However regardless of the processes that are in place to deal with new legislation, there can be a lag between new legislation coming into effect and the time it takes the City to become fully compliant. The time to become fully compliant would be agreed with the relevant legislative body.
- **Environmental Changes** – The impact of climate change on the asset base is not fully understood at this time, but it potentially can impact on increased occurrences of surface water flooding as the assets increasingly struggle to cope with higher intensity storm events. The City assesses a range of climate change scenarios, for its larger storm sewer schemes. Similarly, sustainability trends may potentially impact on LOS, as the City adopts new approaches to service delivery, utilizing alternative operational and maintenance practices and asset types that may not have been in use previously at the City, but have the potential to make the management of our assets more sustainable.
- **Social Changes** – Social trends have the potential to impact on LOS delivered by the City. People increasingly want more information and more dialogue, and this could be with regard to the type and quality of service delivered by the City, in addition to information about their bills. In addition our citizens expect the City to use a broader range of communication approaches including social media to connect the City and its Citizens, which the City has adopted as part of their communication in recent years. The City also recognizes the opportunities and challenges presented by a rapidly aging society and are working to remove social and physical barriers and is in the process of developing innovative, age friendly plans, strategies, programs and services that will accommodate this group of citizens.
- **Technology Changes** – New technology can, especially with regard to IT, have the potential to impact on LOS. As existing hardware becomes obsolete or software becomes unsupported, the City is at a higher risk of failing to deliver LOS. To mitigate this risk the City works closely with both hardware and software suppliers with regard to better understanding the timing for new technology and software and builds this into our capital plans.

Summarized in Figure 4-21 below is an overview of which Service Areas could potentially be impacted by these trends.

**FIGURE 4-21—SUMMARY OF POTENTIAL IMPACTS TO LOS - INTERNAL AND EXTERNAL FACTORS AND TRENDS**

Service Area	Internal Factors/Trends		External Factors/Trends			
	Knowledge retention	Ability to attract/ retain staff	New Legislation	Environmental Changes (E.g. Climate Change,	Social Changes (E.g. Demographic, Demand Shifts)	Technology Change
Transportation	●	●	●			
Environmental Protection - Water Reclamation	●	●	●	●		
Environmental Protection - Sanitary & Storm Sewers	●			●	●	
Corporate Fleet	●	●	●			●
Corporate Facilities	●		●			
Business Solutions (IT)	●					●
Parks and Natural Areas	●	●		●	●	





**Section 5  
Asset Management  
Strategy**



# Asset Management Strategy

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## 5.1 Objective

The objective of our Asset Management Strategy is to outline and establish a set of planned actions, based on best practice that will enable our assets to provide an agreed upon and sustainable level of service to the citizens of Windsor, while managing risk at the lowest lifecycle cost.

As this Asset Management Strategy is further developed it will consider a broad range of asset and non-infrastructure solutions and will develop an implementation process that can be applied to the identification of needs including renewal, enhanced levels of service, growth, legislative and efficiency related projects, along with the prioritization of the lowest whole life cost intervention options, whether funded from operational or capital funds. This will assist in the production of a robust and defensible 10 year plan, including growth projections, to ensure the best overall health and performance of the municipality's infrastructure.

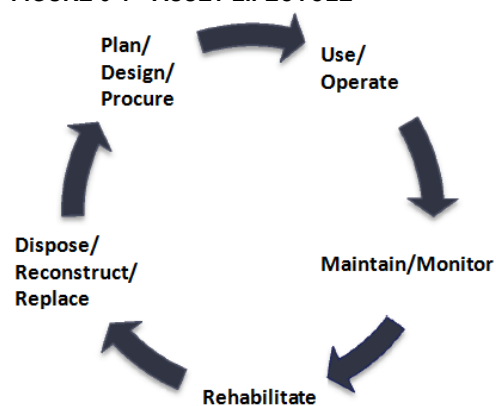
This section includes an overview of our approach to managing assets including condition assessment techniques and the identification of the optimal life cycle interventions required based on the lowest whole of life cost. Prioritization techniques, including risk, are also detailed as an approach to determining which priority projects should move forward into the budget first.

## 5.2 Asset Life Cycle Management Strategy

A comprehensive approach to asset management involves processes for managing and maximizing the performance of an asset while minimizing its costs throughout the course of its lifecycle, as presented in Figure 5-1 below. Asset lifecycle activities therefore enable the City to make better decisions throughout the whole lifecycle and not just to focus on capital/infrastructure solutions. This approach considers a range of parameters, for example, age, condition, historic performance, current capacity etc. Key components of the City's Lifecycle Management Framework include:

1. Operational Strategies – including considering non infrastructure solutions to mitigating risks, deferring the need for upgrades/renewals, Asset Utilization & Demand management and Emergency Response Planning
2. Maintenance Strategies – Including approaches for determining the optimal mix of planned and unplanned Maintenance and for carrying out Maintenance Performance Assessments & Reviews
3. Optimized Decision Making Techniques – including risk based approaches, multi criteria analysis approaches along with approaches to optimizing investment across Service Areas
4. Investment Planning – including the identification and scoping of projects, to address Capital Maintenance, Enhanced LOS, Legislative, Growth (including development) or Efficiency needs.

FIGURE 5-1—ASSET LIFECYCLE



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## 5.2.1 Operational and Maintenance Strategies

Operational and maintenance activities fall into the following categories, each having distinct objectives and triggering mechanisms:

1. **Operations:** Activities designed to ensure sufficient utilization of the asset. These are the regular tasks that are undertaken to ensure the assets achieve their service potential. Operations strategies include activities such as inspections & system monitoring.
2. **Maintenance:** Maintenance strategies are designed to enable existing assets to operate to their service potential over their useful life. There are two types of maintenance:
  - a. **Unplanned Maintenance:** Work carried out in response to reported problems (e.g. an asset failure)
  - b. **Planned Maintenance:** Work carried out to a pre-determined schedule or programmed as a result needs identified during inspection

A key element of asset management planning is determining the most cost effective blend of planned and unplanned maintenance including regularly scheduled inspection and maintenance, or more significant repair and activities associated with unexpected events

The operations and maintenance of the assets is undertaken by City staff or contracted out for specialist services.

The overall operations and maintenance strategy is intended to maintain the current levels of service and mitigate risk while minimizing cost. Currently the majority of asset maintenance is undertaken on a reactive basis only. This is a target area identified for improvement and will form part of the improvement program in the next version of this Corporate AMP.

## 5.2.2 Approach for Options Analysis

Decision making approaches within the City using sound judgment and logic, enable a robust, repeatable and defensible process for the prioritization of the decisions for all asset types. Asset management decisions occur at:

- Operation and maintenance levels
- Project selection
- Project prioritization within service areas
- Project prioritization across service areas

Optimized decision making, either within or across service areas is currently based on a range of approaches which utilize the available asset data, such as condition assessment information and is supplemented with expert knowledge from City staff and outside agencies. For large value or complex projects, such as the Lou Romano Water Reclamation Plant Expansion, the City has utilized more advanced approaches with regard to the selection of the appropriate alternatives and solutions. The decision making process for these larger value projects includes assessing a broad range of capital solutions, such as renewal, rehabilitation and replacement options in addition to operational solutions such as enhanced maintenance regimes. In addition to utilizing these approaches for specific large value projects, a similar approach has been taken for the selection of rehabilitation work for assets such as roads, sewers, and structures, where staff have assessed a range of alternative solutions and developed a range of intervention options that are most appropriate to the City's needs.

Asset management decisions inherently involve the analysis of various options for asset intervention throughout the asset's life cycle. Options are typically analyzed at two distinct levels:

- **Corporate Network Asset Management:** A corporate-wide view of assets within or across service areas with the goal of prioritizing assets and identifying immediate needs across the corporation.
- **Project-level Asset Management:** Typically follows the network level analysis and is more asset-centric. It aims to identify the most suitable intervention to take for an individual asset or asset component.

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Moving forward, as part of the Corporate Asset Management Program, service areas will be able to base their decision making on a more consistent approach which will involve a combination of risk based analysis, Cost- Benefit Analysis (CBA) and Multi Criteria Analysis (MCA) as defined below:

- **Risk Based Analysis:** This approach focuses on maximizing risk reduction for minimum cost. The corporation quantifies the risk, identifies mitigation measures and then sets out to reduce the risks in the most cost effective manner.
- **Cost-Benefit Analysis (CBA):** CBA involves identifying the financial impacts of various alternatives within a business case. This includes both benefits and costs over the entire analysis period with the ultimate goal of assessing which alternative presents the greatest value of benefits compared to costs.
- **Multi-Criteria Analysis (MCA):** The MCA approach typically utilizes a set of benefit criteria which reflect the strategic results of the City as a whole. This approach provides an objective guide to help determine which combination of capital projects represent the best overall value based on the level of benefits they provide to the community and or other stakeholders.

### 5.2.3 Non-Infrastructure Solutions

The City currently adopts a range of non-infrastructure solutions across its assets. Non- Infrastructure solutions include:

- Customer side measures – managing customer demand to reduce demand on the city’s services and/or to shift demand into off peak periods through pricing, regulation, education and incentives
- Supply side practices – review of internal practices e.g. implementing enhanced maintenance regimes, waste minimization or leakage reduction thereby deferring or eliminating the need to build in extra capacity

#### 5.2.3.1 Drivers for implementing non infrastructure solutions within the City include:

- The deferral of capital expenditure – e.g. The *Small Roads Repair program* utilizes a revision in the design specifications for utility cuts and has been shown to extend the residual service life of our roads.
- A move towards a more sustainable approach to service delivery – By not constructing new assets or expanding existing assets and making better use of them, the City avoids the need to add additional infrastructure to its asset base. This not only alleviates the need to spend additional capital but is a more sustainable long-term solution for the City.

#### WINDSOR Case Study 1: Small Sewer Repairs Program – A More Sustainable Approach

Alongside the larger more comprehensive sewer repairs and condition assessment (CCTV) programs, the City has in place a small sewer repairs program that utilizes innovative approaches to minor preventative maintenance and rehabilitation works. This has been shown to extend their useful service life and results in the deferral of larger capital rehabilitation/replacement expenditure.

An example of this approach is the Forest Glade (East end) area of the City where there was a particularly severe inflow and infiltration issue caused by leaking pipe joints. Through the small sewers repair program, an innovative grouting solution was employed which resulted in sewer condition ratings being upgraded from *poor* to *good*. This in effect extended the sewers useful life by 10+ years while deferring the need for extensive rehabilitation work, which would have come at a significant cost, and resulted in disruptive construction work.

## WINDSOR Case Study 2: Shared Services Windsor Public Library, Airport and City IT.

The Corporation of the City of Windsor (the City) has entered into an Information Technology shared services arrangement with the Windsor International Airport (YQG) and the Windsor Public Library (WPL).

The airport, a wholly owned asset of the City, had a fairly complex information technology (IT) configuration with YQG being responsible for the IT systems and infrastructure relating to airport operations. Other systems relating to third party operations (i.e. Nav Canada, Canada Border Services Agency, car rental agencies, etc.) were not part of this arrangement and continue to be managed independently by those organizations. In the past, YQG IT support was provided by several third party vendors. The condition rating for most YQG IT components was rated at either poor or very poor and there was an acknowledged risk of operational failures and downtime due to the aging YQG IT infrastructure. The integration of YQG IT services with the City will result in immediate and long term benefits from leveraging the City's enterprise IT services. Specifically, improved efficiencies, future cost avoidance, improved reliability and reduced down time will be realized through this shared services arrangement.

WPL and the City are two separate entities, each with their own legal obligations. A review through the Technology Infrastructure Shared Services Initiative project identified an opportunity for a consolidated technology service delivery model for the City and WPL. The model would achieve the following objectives,

- Standardization and future replacement of Personal Computer infrastructure
- Integration of infrastructure networks
- Standardization of Telecommunications
- Standardization of software and enterprise resource planning systems
- Integration of Information technology staff

While the project to complete the above objectives is currently in the planning and execution phases, WPL IT staff have been successfully integrated into the City's IT department and are a key resource in the planning process. Implementing the IT service delivery model will allow for a more efficient delivery of technology services, as well as, cost savings to the taxpayer.

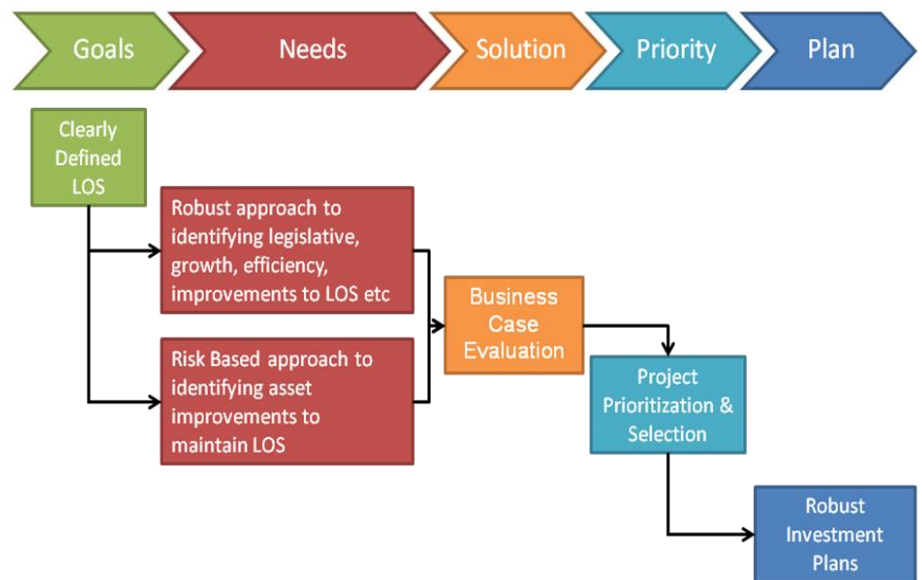
### 5.2.4 Investment Planning

The overall investment planning process (Figure 5-2) is designed to support a Service Area's overall service delivery plan. This includes asset planning; procuring; implementing and commissioning (or bringing into operation) with the focus on linking Investment to customer outcomes as detailed in the figure below.

Therefore, the aim is to directly link investment planning with the required service delivery outcomes that the infrastructure supports.

All Service Areas across the City follow the above process with regard to the identification of goals, carrying out a gap analysis to better understand the need, assessing a range of solutions, prioritising these solutions and developing an investment plan, however the specific approaches within each of the defined steps varies in complexity

FIGURE 5-2—OVERALL INVESTMENT PLANNING PROCESS





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depending on the individual Service Area. Moving forward a more consistent approach will be used that will not only enable a more robust approach within the Service Areas, but will also facilitates informed discussions on risks and funding priorities across Service Areas.

In many cases projects do not just address just one cost driver, but when work is being carried out on an asset, it is often more efficient to address a number of deficiencies within a single project, e.g. carrying renewal type work at the same time that a legislative requirement is being met. Similarly the same approach is used for maintenance activities when the timing of maintenance activities can be scheduled so that any asset outages can be minimized and the work carried out more efficiently.

This approach enables funding to be spent more efficiently within a Service Area and for the impact on customers to be minimized.

The same approach is also taken when looking at projects that are initiated by separate service areas, but are working on assets in the same vicinity e.g. water main renewal and pavement renewal, where it may be necessary to alter the timing of the projects to enable the projects schedule to align.

### **5.2.5 Condition Assessment Programs**

A key building block of good asset management practice is to have comprehensive and reliable information on the current condition of the infrastructure. Municipalities need to have a clear understanding regarding performance and condition of their assets, as all management decisions regarding future expenditures and field activities should be based on this knowledge. An incomplete understanding about an asset may lead to its premature failure or premature replacement.

Some benefits of objective condition assessment programs within the overall asset management process are as follows:

- Understanding of asset condition leads to better management practices
- It allows for the establishment of rehabilitation programs
- When utilized in risk frameworks, it assist in the identification and avoidance of future failures and provides liability protection
- It enables a potential reduction in operational / maintenance costs
- It can be used to develop accurate asset valuations
- It can be utilized to inform proactive repair schedules and preventive maintenance programs
- By understanding asset condition the information can be used to avoid unnecessary expenditures
- It improves the understanding of asset service life therefore contributing towards improving our levels of service
- It improves financial transparency and accountability
- It enables accurate asset reporting which, in turn, enables better decision making

Condition assessment can involve different forms of analysis such as subjective opinion, mathematical models, or variations thereof, and can be completed through a very detailed or very cursory approach.

When establishing the condition assessment of an entire asset class, the cursory approach (metrics such as good, fair, poor) is used. This will be a less expensive approach when applied to thousands of assets, yet will still provide a sound overview of the City's assets, and will allow for detailed assessment or follow up inspections on those assets captured as a poor or very poor condition later.

## **5.3 Future Demand**

This section of the Asset Management Plan analyzes the potential variables affecting municipal resource demand including but not limited to the three primary planning variables; society, economy and environment. The City has assessed the impact of these trends and has developed a number of demand management strategies to meet demand targets without compromising end-user level-of-service delivery.

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The City of Windsor, like many other municipalities, has a projected growth rate that is expected to increase over the next several years. Though Windsor is well positioned for long term development, in the short term the outlook is for modest growth given the challenges faced by the provincial, national, and indeed, the world economies. This in turn affects resource demand and ultimately the allocation of operating and maintenance funds across all service areas. It is important to note however that even though the City is not forecasting any significant growth, this does not necessarily mean there will not be an increase in resource demand and service delivery efficiency. Windsor in fact does experience population movement within the municipality and is also affected by the ever-changing age and social demographic. with a large infusion of foreign residents (historically), a trending towards an older demographic makeup, and population shifts from downtown areas to perimeter neighborhoods, the City does in fact require both new capital investment as well as maintenance and rehabilitation resources to address demand. Because of its geographic location, the City is also affected by a frequent influx of non-residents by means of the 401 development of the Herb Gray Parkway currently in progress, Windsor International Airport, and the shared border crossing with the United States.

The impact of the assumptions made in relation to accommodating the City's changing demographics and future demand will not be universal across all Services Areas and is largely dependent upon the type of asset being considered and its associated life expectancy. For example, a population shift to the City's outer limits may only require existing neighborhood roads to undergo a simple mill and pave whereas that same shift may overwhelm the sewer network and require complete replacement of sewers.

Some of these assumptions regarding demographic shifts will also be influenced by specific long-term initiatives being progressed by the City. Our *2012 Urban Structure Plan*, encourages population movement to the downtown core, which should become a growth centre. However before this movement occurs, a review of the existing aging infrastructure will need to be undertaken in order to ensure that there is adequate capacity and that our existing assets do not become overloaded, resulting in potential service failures.

For larger value projects the City carries out a sensitivity analysis, which assesses a range of growth and population movement scenarios. These population movement scenarios are largely based on the following key factors:

- General economic conditions
- Government policy decisions
- Municipal investment decisions
- Consumer preferences
- Industry Trends

Prior to the construction of new assets, the City considers a range of demand management strategies which provide alternatives to the creation of new assets in order to meet demand and also looks at ways to modify customer demands in order that the utilization of existing assets is maximized and the need for new assets deferred, reduced or eliminated.

## **5.4 Procurement Methodologies**

The City has experience in the selection of alternative delivery methodologies; however these have largely been applied to individual projects without consideration to a corporate wide approach. Larger projects are generally assessed with regard to alternative delivery approaches, but a consistent approach for use across all Service Areas still needs to be implemented. Road construction for example, is scheduled to maximize savings and decrease service disruption by taking advantage of Windsor's milder weather and planning projects deep into Autumn and early Winter. Moving forward the procurement delivery selection process will be based on the value and/or complexity of the proposed projects and approaches will be focused on attaining the best expected useful life at the most reasonable cost. The process will be subject to regular review and will continually build upon prevailing national & international best practices.

## WINDSOR Case Study 3: Windsor Airport- Airport Cargo Village

In order to promote growth and attract and retain talent in Windsor, the City has been working closely with FedEx Canada with regard to developing the Airport Cargo Village. The City, has also partnered with the University of Windsor, to create an Institute for Border Logistics and Security, a research center for international trade and logistics, to assist identifying ways to create the cargo village and leverage the airport assets and the City's strategic border position, in new ways. This ultimately will allow the City to capitalize on its position as the busiest and most important Canada-U.S. trade route.

## 5.5 Asset Management Strategies at the City of Windsor

Through the City's Corporate Asset Management Program, the City will continue to improve its approach to the management of its assets and will put in place processes, procedures and tools to enable a more consistent approach across the City's Service Areas. Detailed below is a brief overview of some of the current asset management practices in place across the City.

### 5.5.1 Transportation

The Transportation asset group incorporates many different types of assets ranging from roads and sidewalks to traffic signals, bridges and major culverts. In order to properly manage and maintain such varied services, comprehensive asset management strategies have been established and are in use. An overview of these strategies for Transportation roads, sidewalks and structures, can be found below.

#### 5.5.1.1 Roads

The City has the following road asset management strategies in place:

- A road pavement inspection program – each year, pavement inspections are performed on the road segments scheduled. A risk-based approach is used to determine the frequency of inspections on a road segment. A road segment is scheduled for inspection using a range of frequencies from a maximum of once every year to a minimum of once in a 7 year period based on set criteria (e.g. last inspection date, age of current pavement, road classification, and current condition rating). Generally speaking, the higher the traffic volumes and the worse the pavement condition, the more frequent the inspections on a road segment. (Alley segments are scheduled for inspection on a lesser frequency because of the lower traffic volume.) Using a structured objective formula-based approach, the pavement inspection data is then used to generate a numeric condition rating of the overall performance of the pavement. Road condition ratings are also updated following the completion of road rehabilitation/reconstruction projects and new construction projects as information becomes available. The numeric condition ratings are used routinely by City staff for the purposes of rehabilitation, reconstruction, and maintenance planning and in budget planning.
- The computerized Hansen infrastructure management system and database is used to track detailed road asset information, inspections, and also work orders to establish a history of activity over the life of the road asset on a segment by segment basis
- A comprehensive road reconstruction and rehabilitation program is in place
- Where possible work is not carried out on Roads which are planned to have either sewer work in the next 5 years or are part of a larger project in the 5 year Capital Program
- Similarly the City coordinates with Windsor Utilities Commission to align timing between road, sewer and water projects
- Perpetual pavement builds are used whenever possible. The initial higher cost for this type of construction is offset by the longer useful life. This reduces disruption to services due to construction and also results in the lowest whole life cost.
- The specifications for utility cuts has been enhanced to help maintain the road segment integrity and retain proper condition rating and useful life projections

One of the key future strategies that the City plans to incorporate into the road preventative maintenance program is a comprehensive crack sealing operation. This would be utilized early on in the assets life

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cycle and would help to extend useful life and maintain a good condition rating. The City is currently investigating options in this area and expects potential pilot projects to be established in the near future.

The City has also directly tied their road operation and maintenance functions with the capital budget as outlined below:

- Reconstruction
  - Performed when the overall structure of the road has deteriorated to a point where the only economical action is the reconstruction of the entire road structure. Typically roads in the poor and very poor corporate condition categories (identified as “Now” deficient in the operational area) would require full reconstruction as they are not good candidates for a mill and pave
- Rehabilitation
  - Mill and pave program
  - Roads which are within 1 to 5 years of becoming deficient and needing additional work to improve them are candidates
  - Expanded asphalt method
  - Rural roads that have enough structure to be able to repurpose the base before laying another top coat of asphalt. This is used predominately for very poor category roads where complete rehabilitation is required
- Preventative Maintenance
  - Small road repair
  - Roads which are 6 to 10 years away from becoming deficient are being looked at for this program
  - Will address sections of bad road to improve its life cycle and potentially improve overall condition of road
  - Crack sealing – currently being investigated through pilot projects
  - Pothole patching program – preventative maintenance measure as well as a short term repair measure; funded through operating budget

The City also understands and recognizes that there will be significant challenges with the roads asset management program moving forward in the future. Some of those challenges include:

- Trying to avoid roads falling into the poor and very poor corporate condition category (identified as “Now deficient” in the operational area), while trying to also address those roads which are already in the poor and very poor corporate condition category.
- EC Row Expressway costs considerably more to maintain than the equivalent length of surface elsewhere in the City, due to the complexity of setting up a construction site for the work and the road requiring a higher condition rating to be maintained than other road types. This is therefore a significant liability and is responsible for higher costs for materials and maintenance
- Construction of the Herb Gray Parkway has impacted some of the surrounding infrastructure. While this has been mitigated through early discussions with the Ministry of Transportation there is still expected to be some impact to surrounding infrastructure the City owns upon completion of the project.
- Coordinating with all utilities which have different needs and timescales for rehabilitation
- Keeping up with technology, methods and materials for both maintenance and replacement

The following case study demonstrates how the City leveraged external funding via various grants and subsidies to provide a return on investment in future generations by applying asset lifecycle management and by undertaking a value-based decision making process.

## WINDSOR Case Study 4: Walker Road Improvement Case Study

### Walker Road Improvements

Walker Road is a major north-south arterial roadway, connecting the City of Windsor to the Town of Tecumseh, and to County and Provincial highway systems. It serves commuting traffic, is a gateway to Windsor for air and rail travelers, services industrial and commercial uses, and is a major service corridor for municipal infrastructure. Windsor Area Long Range Transportation Study Master Plan (WALTS) identified the need for capacity improvements in this corridor.

The Walker Road Corridor Environmental Study Report undertook a comprehensive review of the improvements required on Walker Road (10km) and Grand Marais Road (3km). The purpose of the study was to establish the preferred solution to resolving roadway operational deficiencies based on anticipated level of traffic growth, with particular consideration to pedestrian and vehicular safety. These corridors have experienced significant growth, resulting in deteriorating traffic safety and operating conditions. The Potential for future development along the corridor gave rise to the need to undertake the study.

The aim of the review was to ensure the safe movement of vehicles, cyclists and pedestrians through the corridor. Improvements identified were developed in consultation with local residents, affected business and property owners, interest groups, as well as municipal and provincial agencies. The study represents the culmination of the discussions undertaken with these groups.

The study, completed in 2001, identified Near Term (5 year program) and Long Term (beyond the 5 year program) improvements.

Since 2001, a number of improvements have been completed under the City's annual Capital Works Programs (\*), Let's Get Windsor Essex Moving (LGWEM) funding (\*\*), Infrastructure Stimulus Funding (ISF) (++). Other components are included in the approved Capital Works Budget, as approved in 2013, or recommended for years 2014 to 2018+.

Near Term improvements:

- Reconstruction of Walker from Division to the City Limits (\*, ++)
- Construction of Foster Street Extension (\*)
- Continue discussions with Daimler Chrysler to determine the need for reconstruction of Walker/Grand Marais intersection (\*\*); and Grand Marais Road (\*\*)
- Construction of Digby Street Extension to Temple Drive (2018+)
- Installation of traffic signals at Richmond St, Parkdale Place (\*\*), Airport Road (\*)

Long Term Improvements:

- Walker from E C Row Expressway to Division Rd (\*\*, 2013, 2015-2017, 2018+)
- Walker/Ypres Intersection
- Walker/Tecumseh Intersection
- Walker/Ottawa Intersection
- Walker/Wyandotte Intersection (++)

Maintenance costs for repairs for potholes, curbs, sidewalk, catch basins, manholes, spot road repairs, and concrete panel replacements are reduced as sections of the road are reconstructed.

Service enhancements are now being realized in the form of road capacity enhancements, additional turning lanes, safety improvements (with construction of curb and gutter, sidewalks), and additional signalized intersections.

### 5.5.1.2 Structures

The City has the following key asset management strategies in place:

- Structures ( i.e. bridges and culverts (over a 3m span)) are inspected every two years in accordance with the Ontario Structure Inspection Manual (OSIM)
- All inspections are in the *Hansen* database and work orders are tracked to establish a history of activity over the life of the structure
- A preventative maintenance strategy is in place, including:
  - The bridge washing program which aims to keep debris from key elements and remove corrosive de-icing chemicals.
  - Recoating of barrier walls to prevent decay and or deterioration
  - Minor maintenance repairs that are identified through the bi-annual inspections

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- The City has in place a bridge rehabilitation program. This includes changing from expansion joints to semi integral joints when the design of the bridge allows for it. This extends the life of the joint significantly for older bridges.
  - Programs are being developed to improve the overall aesthetics of the City's bridges
  - A prioritized plan is in place for bridge replacement work, so that if further funding becomes available, work can be quickly and efficiently advanced to make the best use of the funds. These plans outline immediate needs based on objective ratings.

### **5.5.1.3 Sidewalks**

The City has the following key sidewalk asset management strategies in place:

- A sidewalk inspection program to identify trip hazards and other sidewalk deficiencies in-the-field for repair purposes and to generate overall sidewalk condition ratings which are used by City staff in maintenance, rehabilitation, and budget planning. A risk-based approach is used to establish inspection frequencies for a sidewalk segment based on the pedestrian traffic level and the last recorded condition rating.
- The *Hansen CMMS* is used to track detailed sidewalk asset information, inspections, and work orders to establish a history of activities over the life of the asset on a segment by segment basis.
- Maintenance and rehabilitation programs including spot repairs, slab replacements, and total reconstruction depending on the type and severity of the deficiencies as well as site and economic considerations. A number of repair methods are used based on industry practices.

## **5.5.2 Environmental Protection—Storm water and Wastewater**

### **5.5.2.1 Sanitary and Storm Sewers**

The City's sewer system is a broad network of sanitary and storm sewers that provide a critical and essential service to all municipal residents and businesses. This network incorporates sewer laterals, trunk mains, interceptors and force mains all of which act together to ensure proper drainage of wastewater and storm water from the City. Below is a brief overview of the asset management strategies that are in place to support this infrastructure.

- CCTV camera inspections, based on current funding levels, should result in a 15 year citywide cycle
- An extensive sewer maintenance program is in place, which includes flushing, rodding and bucketing.
- A smoke testing program to determine cracks/breaks and potential weak spots is in place
- The City downspout disconnect program continues to relieve burden on the storm sewer network
- The City works closely with the Windsor Utilities Commission (WUC) to review the scope of future projects
- The City is continuing its work on the separation program for combined sewers
- Trenchless technology rehabilitation methods are continually being assessed. This involves grouting, cured in place pipe, liners or other solutions which don't involve digging and can be a very cost effective approach to extending the useful life of the sewer.
- Specifications for sewer repair have been enhanced and repairs must be for the life of the pipe which is typically 100 years.
- The City continues to establish its flow monitoring program to determine the full scale of its network problems, as opposed to just reacting to isolated situations.
- Scheduled repairs are undertaken proactively based on the results of CCTV inspections available. Unscheduled emergency repairs are undertaken reactively.



- A manhole inspection program to determine manhole repair needs. This also improves the ride-ability of the road.
- The *Hansen CMMS* is used to track detailed sewer asset information, inspections, and maintenance work order information on a segment by segment basis

Despite the current practices in place to manage the sewer network, there are still a number of challenges facing this vast underground network. The City maintains a considerable portion of combined sewers which are relatively old and are in the latter part of their estimated useful life and pose a significant risk of failing and hence wastewater backup. The City also has challenges in maintaining large sections of trunk mains which are typically hard to by-pass or inspect and can be very costly to repair. Subject to funding, further enhancements to the asset management strategy are therefore planned as follows:

- The City plans to move to a 10 year cycle for its CCTV program.
- The feasibility of addressing combined sewers and separating storm and sanitary flows at the same time road and water work are being done is being assessed.
- An approach for dealing with inflow and infiltration, with the aim of alleviating capacity issues and reducing the need for ongoing maintenance will be developed.
- The municipal downspout disconnect program to reduce volume being processed at Lou Romano Water Reclamation Plant and to reduce basement flooding will be continued.
- The root cause of flood situations will be assessed in more detail, as opposed to treating flooding as a localized issue.
- The following case studies demonstrates how the environmental protection services within the City through its various linear and facility assets for sewers and storm water demonstrates proactive methodologies in dealing with the management of these assets, via comprehensive asset management programs from condition assessment through to design and implementation accounting for a proactive approach to asset management in all phases of the assets' lifecycle management.

#### WINDSOR Case Study 5: Sewer Rehabilitation Program

The City of Windsor's existing sewer system consists of several different system configurations as well as different pipe materials.

The older systems are combined sewers, which carry both sanitary waste as well as storm water. This type of system can result in basement flooding during storm events due to surcharging of the sewers. Much of this system is made up of brick pipes. The combined sewers make up approximately 214 km of the overall system.

The second type of system is the over/under system, where the storm sewer sits immediately above the sanitary sewer, sharing the same manhole. During rain events, the storm sewers surcharge and overflow into the sanitary sewers which can lead to basement flooding. Much of this system is made of vitrified clay pipe, which is prone to inflow / infiltration of ground water as well as cracking of the pipe itself. It is estimated that there is approximately 22 kms of sanitary sewer and 21 kms of storm sewer in this type of system remaining in the City.

The third type of system is a fully separated system, where there is a sanitary sewer and a storm sewer completely separated from each other. Pipe materials for this system vary from vitrified clay to PVC and concrete. The vitrified clay pipe is problematic as noted above.

Historically, and looking forward, available capital budget can vary significantly from year to year but is generally in the \$10 million to \$15 million range. Typically, a sewer rehabilitation project costs between \$2,500 to \$2,800 per linear metre of road, consisting of complete separation or reconstruction of storm and sanitary sewers, and reconstruction of road, curb and gutter, and sidewalks. Water main costs would be in addition to this amount, and paid for by Windsor Utilities Commission.

When determining the program for future years, a number of factors are considered, including:

- CCTV assessments (where available)
- Road condition rating
- Environmental issues (source water protection)
- Incidents of basement flooding
- Water main replacement schedule
- Suitable outlet in place.

### Windsor Case Study 6: Lou Romano Water Reclamation Plant Expansion (Water Reclamation)

To have a clear plan for Pollution Control along Windsor's riverfront the "Windsor Riverfront Pollution Control Planning Study" was commissioned in 1992. This study was carried out in three phases, culminating in an implementation plan that was reported to City Council in July 1999.

The City recognized the need not only to upgrade the Lou Romano Water Reclamation Plant (LRWRP), but also to expand the plant to enable economic development throughout the City. The LRWRP flows were reaching a point where, without an expansion, the plant would have insufficient uncommitted reserve capacity to satisfy the Ontario Ministry of Environment. There was also a concern regarding the LRWRP meeting Windsor's own Official Plan with respect to reserve capacity for future development. The expansion was therefore planned to increase the capacity from 35 MGD to 48MGD.

An innovative testing program had been undertaken between 1990 and 1995 to investigate alternative treatment options for the plant upgrade. This program identified two alternative processes to conventional secondary treatment, which offered substantial savings.

In 1994 a Master Plan for the West Windsor Pollution Control Plant reported the land requirements for the plant to City Council.

The Environmental Study Report (ESR) for the Upgrade and Expansion of LRWRP, was commissioned in Early 2000. The report provided the detail and rationale for the size of the capacity increase, the innovative treatment processes, and the anticipated costs.

The Debt Management and Capital Financing Plan presented to council during the 2002 budget deliberations recognized the need to upgrade the LRWRP.

Windsor's was prepared to upgrade the plant provided the senior levels of Government contribute significant funding.

The Province announced the *Millennium/Superbuild* fund, and indicated that Windsor would receive a total of \$19 million as their share of that fund. As part of their Infrastructure Program the Federal government also made a \$9 million contribution to the project thereby increasing the total value of contributed Federal and Provincial funds through the Canadian Ontario Infrastructure Program to \$28 million. The City also installed a receiving inlet chamber to process wastewater from the town of LaSalle which contributed approximately \$25 million to the project. The final project was completed at a cost of \$111 million. This is a great example of cooperation with both a local municipality and with the senior levels of government.

### 5.5.3 Corporate Fleet

The Fleet Division provides fleet management services covering the acquisition, maintenance, repair, disposal and management of the corporate fleet and in the provision of services for outside agencies. Asset management strategies in use include:

- Operating on a full cost recovery position
- Adopting a life cycle approach to fleet replacement including fleet replacement planning along with taking into account emerging technology and trends and reducing environmental impacts where possible.
- Utilizing a comprehensive computerized fleet and fuel management system for tracking vehicles and equipment, work order, preventative maintenance and inspection programs, parts inventory, purchasing fuelling and associated costs
- Carrying out annual inspections of all vehicles
- Utilizing the optimum mix of in-house rental of vehicles supplemented by contracts with external providers of cars and construction equipment

As part of Fleets asset management strategy, a comprehensive condition assessment and life cycle renewal program has been developed. This strategy is based on a combination of expert opinion and an assessment of condition. The City's life cycle management program including fleet replacement planning, preparation of vehicle specifications, acquisition, new vehicles capitalization, maintenance, repair and disposal services are based on the established life cycle variables found in Table 5-1.

Table 5-1 Life cycle is established for all vehicles based on established industry standards.

**TABLE 5-1—ESTABLISHED ESTIMATED USEFUL LIFECYCLE PER INDUSTRY STANDARDS**

Cars	4 – 6 years
Pickups	6 – 8 years
Utility trucks	8 – 10 years
Large Trucks (Gross Vehicle Weight 50,000 – 80,000)	10 years
Refuse packers	7 – 10 years
Specialty units	10 – 20 years

These replacement lifecycles are based on the City implementing a comprehensive, preventative, maintenance program, the aim of which is to provide efficient and cost effective maintenance and repair services. Through a combination of manufacturer’s recommendations and the City’s knowledge of operating these assets the City has in place a preventative maintenance schedule that sets down the service interval (based on either time or usage) for each vehicle type, that has resulted in assets reaching, or exceeding their design lives, with fewer failures.

### 5.5.4 Information Technology

The Information Technology Services asset group incorporates many different types of assets falling under two broad categories;

- Desktop hardware such as monitors, desktops, laptops, printers and software applications.
- Back end infrastructure assets such as servers, network gear, phone systems and Uninterruptible Power Supplies.

In order to properly secure and maintain these assets, as well as project future needs and expenditures, the City has in place a set of guidelines that are intended to provide an overall framework for Information Technology’s asset management approach including the following:

- Measures are in place to provide high availability and continuity of the corporate technology systems and information assets, and the processes necessary to perform normal business.
- Capacity planning is carried out to ensure business growth can be supported by the Information Technology infrastructure.
- When a new system is implemented or a significant change is made to an existing production system, the affected asset is reviewed for security risks, and any residual risk, resulting from the change, must be approved prior to implementing the change.
- Processes are in place for the control of the entire development and maintenance life cycle, with the system development and test environment being separated and isolated from the production environment, including segregation of duties so that development personnel are not able to implement changes to production systems.
- Processes are in place covering authorization to access the corporate technology systems, and the data that it holds and are reviewed at regular intervals.
- The boundary connections to outside networks are protected by gateways that limit access and monitor attempts to interfere with the internal network, thereby enforcing the protection of the internal network.
- Processes are in place to ensure that purchased and outsourced systems have the necessary features that allow the implementation of security controls to comply with the Information Security Policy, Corporate Directives, and Standards.

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## 5.5.5 Environmental Protection—Parks Services

The Parks Services asset group is a very diverse portfolio and often crosses over into other asset classes with regard to maintenance and operation. In addition to simply maintaining and developing these assets, Parks Services is also responsible for producing the municipal Parks and Recreation Activity Guide which is the primary source of leisure information for City residents and visitors. This has been not only an invaluable asset in promoting the health and wellbeing of all citizens, but also provides the City with an opportunity to showcase the tremendous work being done to our recreational and leisure spaces.

The Parks Development Division is responsible for the design and development of all parks within the City of Windsor. The city is made up of two distinct park classifications: Community and Regional Parks and Neighbourhood Parks.

Community and Regional Parks are designed for the recreation and leisure activities of all Windsor residents and/or broader regional population. Neighbourhood Parks are designed for the recreation and leisure activities of residents within a defined service radius of Windsor.

Examples of asset management strategies that Parks have put into place include:

- Installing computers in trucks that are used for tree maintenance. This has allowed the City to be more responsive to 311 calls and provides for better and timely updates
- Implementing enhanced tree trimming and inspection programs to address potential damage due to storms before they occur.

Future plans for improving the approach to the management of Parks assets includes:

- Developing a new master plan for parks and sports fields. This will include revised design and maintenance standards, levels of service commentary, consolidation of amenities and facilities, and a long-term projection regarding the types of sports fields needed to serve the community
- Developing a new Level of Service approach for parks
- Updating the Central Riverfront Implementation Plan
- The removal of fences in parks, which will result in reduced maintenance costs associated with their upkeep.
- Review of the design and layout of buildings and properties, to take into account the minimization of maintenance costs.
- Reviewing the use and training of temporary staff e.g. Students, who are not necessarily as focused on the proper care of assets and equipment as City staff
- Review of the approach to snow removal on trails and sidewalks
- The development of Service Level Agreements covering the level of maintenance to be carried out for all parks, sports fields, boulevards and other green spaces to ensure they can be maintained within the agreed budgets

The following case study from Parks Services demonstrates an overview of the asset lifecycle decision making process taken into consideration for maintenance and operations of its unique vegetation/landscaping assets within each of the parks unique facilities including -gateways” into and out of the City of Windsor.

### Windsor Case Study 7: Parks- Gateway Beautification Program

Parks in the City of Windsor are a central part of the City's Gateway Beautification Program. The Program includes partnerships with private companies including Jameson Industry and the BIA.

The objective of the program is to beautify the main gateways within the city while lowering maintenance costs and addressing health and safety challenges for the City's staff. The City of Windsor has many landscaped medians separating traffic flow along major thoroughfares with maintenance being performed by the City's parks department. As an alternative to more traditional practices, the City has been adopting innovative approaches, such as the use of the artificial turf installed along the Dougall Avenue corridor, which has resulted in a reduction in maintenance efforts and costs. Currently, further analysis is being carried out on the whole life cost of the Dougall Ave. artificial turf installation and feedback is being sought from the public to obtain their views on such projects. The goal is then to incorporate innovative approaches into the City's design standards and to utilize similar approaches across the City where applicable.

## 5.5.6 Corporate Facilities

The Corporate Facilities Management Service Area encompasses a very wide network of diverse buildings and structures and is therefore quite unique in its purpose and function. Because every facility is different in its operating and maintenance requirements, Corporate Facilities cannot take a one-size-fits-all approach in its asset management approach. Whether analyzing the prospects and feasibility of a new build or planning for the rehabilitation of an older facility, a custom working plan is required, that ensures all of the required community needs are taken into account while still following established industry construction and maintenance standards. The following case study provides an overview of the decision making process associated with a municipal facilities project.

### Windsor Case Study 8: Windsor Family Credit Union Centre (Corporate Facilities)

The Windsor Family Credit Union (WFCU) Centre is a multipurpose recreation and entertainment complex, administered by the City of Windsor, offering an extensive schedule of quality sports events, professional entertainment, community programs, rental opportunities and public skating.

Home to the OHL's Windsor Spitfires and host to many internationally recognized performers, it also hosts minor hockey tournaments, basketball games and leisure community programs. The complex features four NHL-size community rinks including a primary spectator bowl seating 6,500 people, as well as a sports gym, leisure gym, reception hall and numerous meeting rooms.

On March 3, 2006 City Council held a strategic planning session where six alternative scenarios to proceed with an ice arena complex were presented and two scenarios were agreed for further investigation. This analysis took into consideration the following City requirements:

- A net gain of two community ice-pads
- An improved OHL facility
- A requirement for additional recreation space in the East area of Windsor
- The opportunity to consolidate existing facilities without a LOSs in recreation space
- The development of the new facility was approved. As a result costs to repair and or reconstruct older facilities were avoided. This resulted in operational savings by managing and maintaining a new facility rather than several older ones.

## Windsor Case Study 9: Data Management & Implementation – 360 Facility – CMMS (2nd Year Implementation)

The Data Management & Implementation Strategy is an integration strategy in which an inventory has been developed for all Corporate facilities. The Facility Assets are broken down into 10 core components and the internal contents of the facilities have also been inventoried. The key components of the Data Management & Inventory strategy are the Condition Rating Program and Inspection Program, which includes building envelope and roof condition assessments along with a Preventative Maintenance Program. Internal reviews are carried out on a regular basis to ensure that the Preventative program and policies are appropriate for the asset management of facilities.

Currently maintenance funding is held by the individual Services Areas, however the longer term aim is for the centralized asset lifecycle management of all property assets. This would include implementing changes to the Condition Inspection Program for all component levels which will enable a move from a —~~Reactive~~” to a —~~Proactive~~” model. The City is moving towards a whole life costing approach for decision making, however this is not currently utilized in all cases and sufficient data is not available to enable a full analysis of the root causes of failures. A future goal is to work towards complete life cycle costing and to have a better understanding of failure modes.

## 5.6 Risks to the Asset Management Strategy

An assessment of the risks to the delivery of the City’s Asset Management Strategy has identified a number of areas that will require close monitoring in the future. These risks are not specifically associated with failing assets, project delivery or Levels of Service but are rather focused on large scale, corporate enterprise risks that will adversely impact the delivery of the Plan if they materialize. These risk factors could ultimately impact the ability of the City to deliver established Levels of Service and must be monitored and addressed throughout the life of the plan. The following Table 5-2 reflects risks outside of the asset operations and maintenance realm that ultimately pose a threat to the implementation of our asset management strategy.

**TABLE 5-2—SUMMARY OF POTENTIAL RISKS AND MITIGATION STRATEGIES**

Identified Risk	Potential Mitigating Actions
Ability to retain/attract staff ensuring accurate and timely information is being collected and analyzed	Establish proper training and recruitment programs with particular emphasis on positions within CMMS network
Funding levels lower than those projected	Look into alternative funding strategies
Funding not allocated to asset management improvement initiatives such as further condition assessment work	Develop a robust business case that sets out the benefits versus the risks of the — <del>do nothing</del> ”
Occurrence of climate change/adverse weather/unforeseen events resulting in funds being diverted to assets that were not originally planned for	Establish alternative funding methodologies to ensure all essential projects can be funded without allowing others to be pushed back beyond a reasonable timeframe
Growth projections/population movements not as planned	Conduct annual needs studies across all service areas and tie to most recent census data
Construction/Inflation prices not as assumed	Ensure all service areas tie funding requests to most up to date construction price index



Section 6  
Financing Strategy





# Financing Strategy

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## 6.1 Background

This section contains the financial requirements associated with the management of the City's assets over the Plan period. The financial projections presented in this section are based on the best available information to date. Plans for the ongoing improvement of information quality and the planning process will be an integral part of the City's Corporate Asset Management Program going forward and is covered in greater detail in Section 7.

For effective implementation of the AMP, the Plan must be fully integrated with the City's financial planning and long-term budgeting processes. The development of a comprehensive financial plan which fully reflects the City's asset needs will allow the City of Windsor to identify the financial resources required for sustainable asset management based on long term asset needs, desired levels of service, legislative requirements, and projected growth requirements.

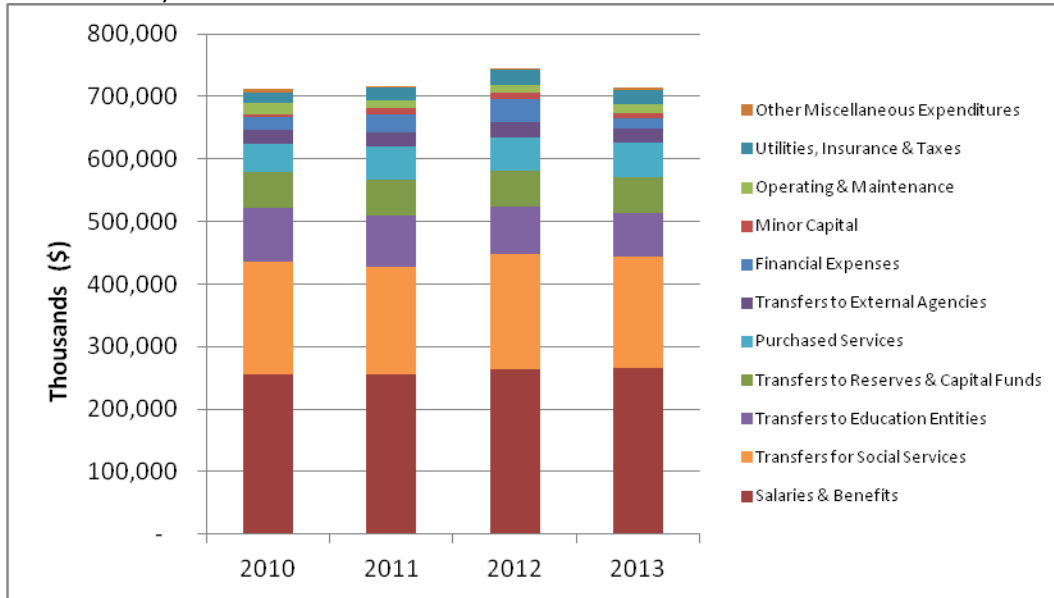
This version of the AMP is primarily focused on the City's asset lifecycle needs, specifically the expenditure required to maintain the current level of service to Windsor's community and stakeholders.

Likely levels of expenditure required to enable enhanced Levels of Service, meet new legislation, accommodate growth and enable the City to become more efficient (e.g. replacing assets as more efficient alternatives become available rather than because the asset has reached the end of its useful life), will not be covered in this version of the AMP. Working within current funding levels, the City has to continuously prioritize expenditures between all of these investment drivers. However, moving forward the objective is to ensure there is an increased focus on asset renewal needs. Notwithstanding significant increases in capital funding over the last decade (essentially annual funding doubled), there are still significant infrastructure deficits to be addressed. The infrastructure deficit is an issue common to cities across Canada including the City of Windsor

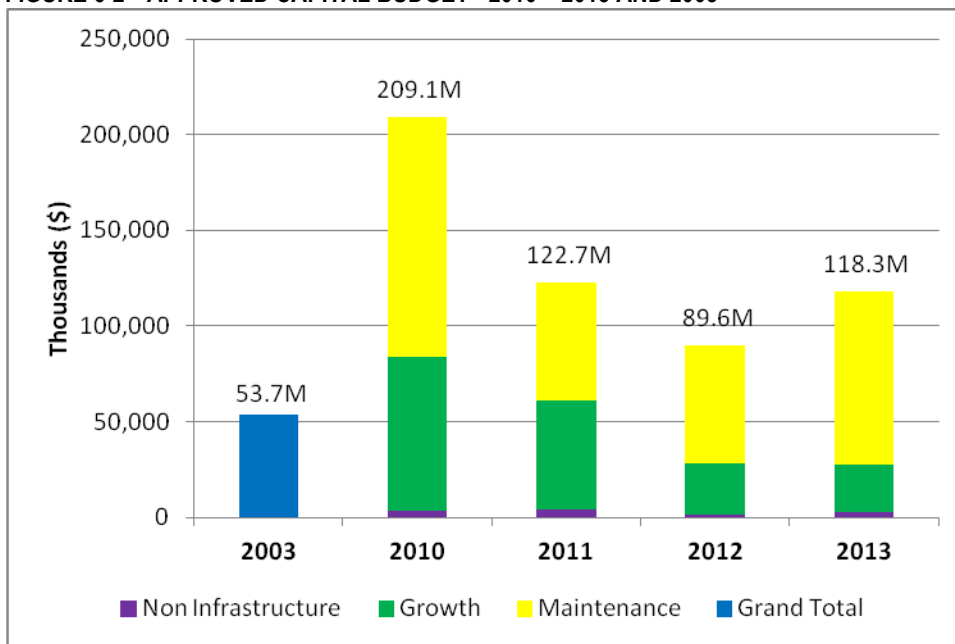
## 6.2 Budget and Expenditure History

Figure 6-1 shows the operating expenditure budget for the period 2010 to 2013. The expenditure history detailed in this section is taken from previous Financial Information Returns (FIRs), as detailed in the figures below.

**FIGURE 6-1—OPERATING EXPENDITURE HISTORY BY EXPENDITURE TYPE 2010 – 2013 (ADJUSTED FOR INTRA FUND ALLOCATIONS)**

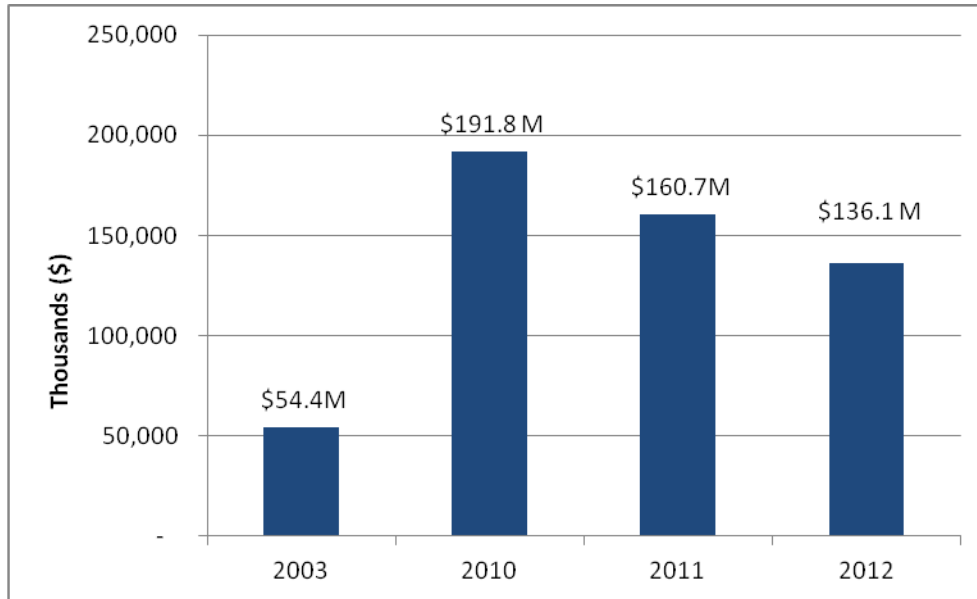


**FIGURE 6-2—APPROVED CAPITAL BUDGET - 2010 – 2013 AND 2003**



2009 – 2011 were part of the Infrastructure Stimulus Funding (ISF) enhanced budget years. The amounts shown in Figure 6-2 are therefore reflective of those enhancements, however typical annual sustainable funding has been approximately \$90M in recent years. In the last decade the combined pay as you go transfers to the capital budget from the operating budget and the sewer surcharge budget increased from \$28.1M to \$63.6M, an increase of 225%. The 2003 approved capital budget was a total of \$53.7M and capital expenditures were \$54.4M.

**FIGURE 6-3—ACTUAL CAPITAL EXPENDITURE HISTORIES 2010 – 2012 AND 2003**



The variance between the budgeted amounts and actual expenditures relate to the normal timing of capital expenditures which in many cases span multiple years.

## 6.3 Budget Forecasts

Capital budget forecasts for the Plan period are based on the 2014 five year Capital Budget. Beyond 2018, capital budget figures have been extrapolated to provide the 10 year projection. For operating budget projections, these are based on the 2014 Operating Budget, which has been used as the basis for the remaining 9 years of the Plan. These projections are subject to further review based on Council's review and approval of this AMP and its funding requirements.

### 6.3.1 Operating Budget

The operating budget covers the current year, as well as unmitigated projections for the following 3 years annually. In preparing the operating budget the capital budget forecast is taken into consideration. This ensures that sufficient funding is available to operate, repair and maintain any new assets that are created, or are subject to significant renewal projects. The ongoing maintenance of infrastructure to hold assets in good condition continues to be a priority. Other factors such as expected inflation rates are also considered when developing the budgets. In compiling the annual operating budget, consideration is also given to how much funding is allocated to capital reserves, which will be used to fund future capital projects.

As a result of economic challenges experienced by Windsor area residents in the last 5 years, Council and Administration felt it was prudent to hold the line on the tax levy. In order to achieve its strategic goal, since 2009 the City has provided Council with cuts to operational budgets which were achieved through; new ways of delivering service; line by line budget reviews and careful selection of reductions with minimal service impact; achievement of collective bargaining agreements with moderate wage impacts (other than the arbitrated decisions); significant benefits from the provincial upload of social services costs and increased OMPF funding. Of note, during this period of fiscal restraint, the transfers to fund the capital budget, has actually increased as have the City's reserve funds. Future operating budgets are expected to be developed with the needs of the AMP in mind.

**TABLE 6-1—TOTAL OPERATING GROSS BUDGET 2013 - 2017 (ADJUSTED FOR INTRA FUND ALLOCATIONS)**

	2013	2014 Projected	2015 Projected	2016 Projected	2017 Projected
Salaries & Benefits	\$265,105,416	\$271,388,546	\$277,616,727	\$284,250,878	\$291,114,790
Transfers to Social Services	\$178,762,199	\$178,379,806	\$180,079,962	\$181,814,292	\$183,583,482
Transfers to Education Entities	\$69,439,132	\$69,439,132	\$70,827,915	\$72,244,473	\$73,689,362
Transfers to Reserves & Capital	\$57,132,234	\$60,982,234	\$60,982,234	\$60,982,234	\$60,982,234
Purchased Services	\$54,812,300	\$55,425,918	\$57,034,436	\$58,675,125	\$60,348,628
Transfers to External Agencies	\$24,133,813	\$23,488,387	\$23,958,155	\$24,437,318	\$24,926,064
Financial Expenses	\$15,126,636	\$10,780,486	\$10,996,096	\$11,216,018	\$11,440,338
Operating and Maintenance	\$14,579,896	\$15,682,558	\$15,996,209	\$16,316,133	\$16,642,456
Utilities Insurance & Taxes	\$23,269,776	\$24,452,617	\$25,675,248	\$26,959,010	\$28,306,961
Other Miscellaneous Expenditures	\$3,564,281	\$3,051,962	\$5,051,962	\$7,051,962	\$9,051,962
Minor Capital	\$8,780,187	\$8,876,428	\$9,053,957	\$9,235,036	\$9,419,736
<b>Total Operating Expenditure</b>	<b>\$714,705,870</b>	<b>\$721,948,074</b>	<b>\$737,272,900</b>	<b>\$753,182,479</b>	<b>\$769,506,013</b>

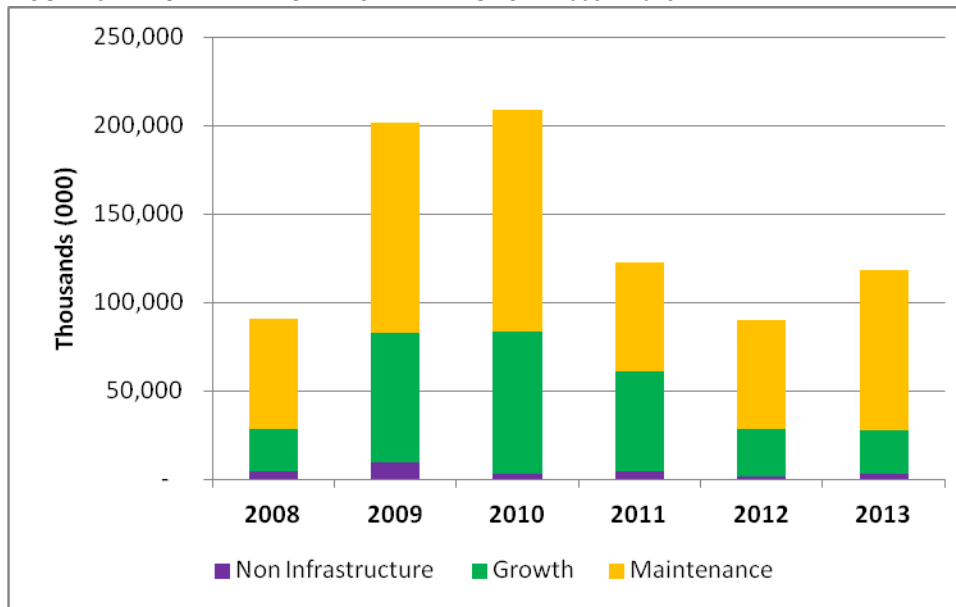
Moving forward it is not anticipated that the level of operating expenditure will increase significantly for the operational components. However, the components related to pay-as-you-go funding of the capital and reserve funds will be reviewed in conjunction with the needs identified in this AMP. Additionally, there will be an increased focus on the best life cycle solutions for maintaining the asset base and continued delivery of current or improved levels of service.

### 6.3.2 Capital Expenditure Budgets

A five year capital budget is presented to Council on an annual basis. Council approves the current year's capital budget and approves, in principle, the remaining four years. The selection, project development, and prioritization processes for the projects are described in Section 5 of this report (Asset Management Strategy). As described in Section 5, the requested budget is reviewed with the Service Areas to assess the program needs, trends and priorities. The review includes actual costs incurred in the past for similar projects, as well as current costs to date for projects in progress. Capital project information is gathered from the Service Areas to provide justification for recommended projects. The formal capital budget includes a five year forecast however many departments maintain budget forecasts which exceed this time period. Once the requested budget is agreed upon, financing options for the request are determined based on the optimum funding structure taking into account the available sources of revenue.



**FIGURE 6-4—TOTAL APPROVED CAPITAL BUDGET 2008 – 2013**



**TABLE 6-2—TOTAL APPROVED CAPITAL BUDGET (000'S)**

	2008	2009	2010	2011	2012	2013
Maintenance	62,310	118,621	125,621	61,468	61,227	90,565
Growth	23,855	72,903	80,086	56,980	26,922	24,921
*Non infrastructure	4,805	9,813	3,453	4,334	1,540	2,832
<b>Total Approved Capital Budget</b>	<b>90,970</b>	<b>201,336**</b>	<b>209,160**</b>	<b>122,782**</b>	<b>89,689</b>	<b>118,317</b>

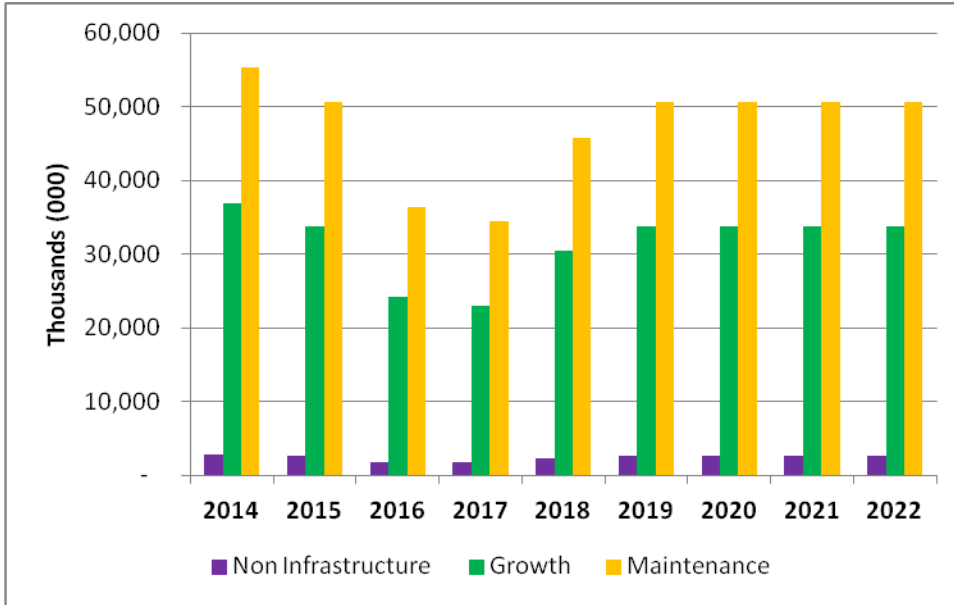
\* Non infrastructure projects are those which do not result in further investing in the assets. Examples include but are not limited to studies, master plans and reviews

\*\* Reflect higher budget due to the significant ISF program

Figure 6-4 and Table 6-2 reflect the City of Windsor's capital budgets from 2008 – 2013. There is an average of 62% in funding for maintenance type projects. 2009 – 2012 were part of the ISF enhanced budget years and 2013 the \$64.3M enhanced budget. The amounts shown are reflective of those enhancements. The normal available funding is in the \$90M range, as is seen in 2008 and 2012.

Figure 6-5 and Table 6-3 below reflect the 2014 – 2018 recommended capital budget as well as estimated expenditures for 2019 – 2022. The 2019 – 2022 expenditure estimates are based on projected available funding. There is slight increase projected in available funding in 2019 and reflected in the total amount.

**FIGURE 6-5—PROJECTED CAPITAL BUDGET EXPENDITURES 2014 – 2022**



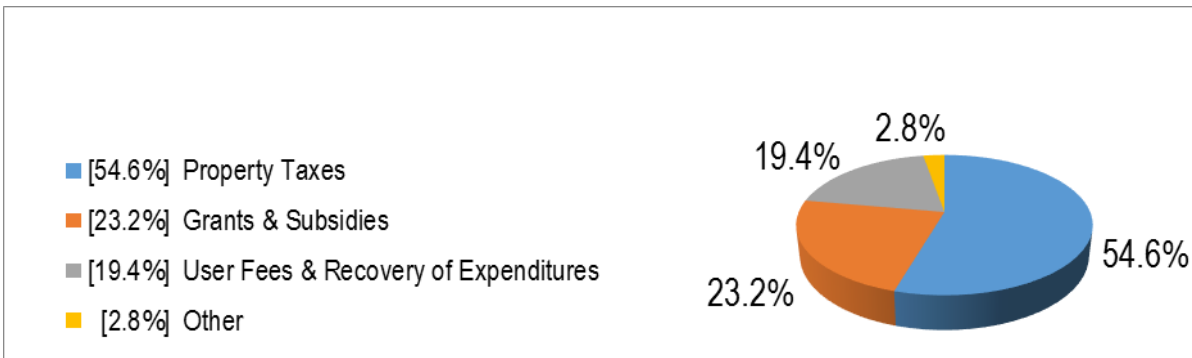
**TABLE 6-3—PROJECTED CAPITAL BUDGET EXPENDITURES (000'S) 2014 – 2022**

	2014	2015	2016	2017	2018	2019-2022
Maintenance	55,399	50,633	36,350	34,474	45,685	50,691
Growth	36,933	33,755	24,233	22,983	30,457	33,794
Non Infrastructure	2,856	2,610	1,874	1,777	2,355	2,613
<b>Total Capital Expenditure</b>	<b>95,188</b>	<b>86,998</b>	<b>62,457</b>	<b>59,234</b>	<b>78,497</b>	<b>87,098</b>

## 6.4 Revenues

The City obtains funding for its operating and capital expenditures from a number of sources. Funding sources for operating expenditures are shown in Figure 6-6.

**FIGURE 6-6—CURRENT FUNDING SOURCES FOR OPERATING BUDGET EXPENDITURES**



Slightly greater than half of its revenue is derived from property taxes. The second largest revenue sources for the City are grants and subsidies.

With regard to the funding of capital projects, the main sources of current funding for the City are as follows:

**Pay As You Go**

- Pay As You Go Operating Budget
- Pay As You Go Sewer Surcharge
- Pay As You Go Debt Reduction

**Corporate Reserves**

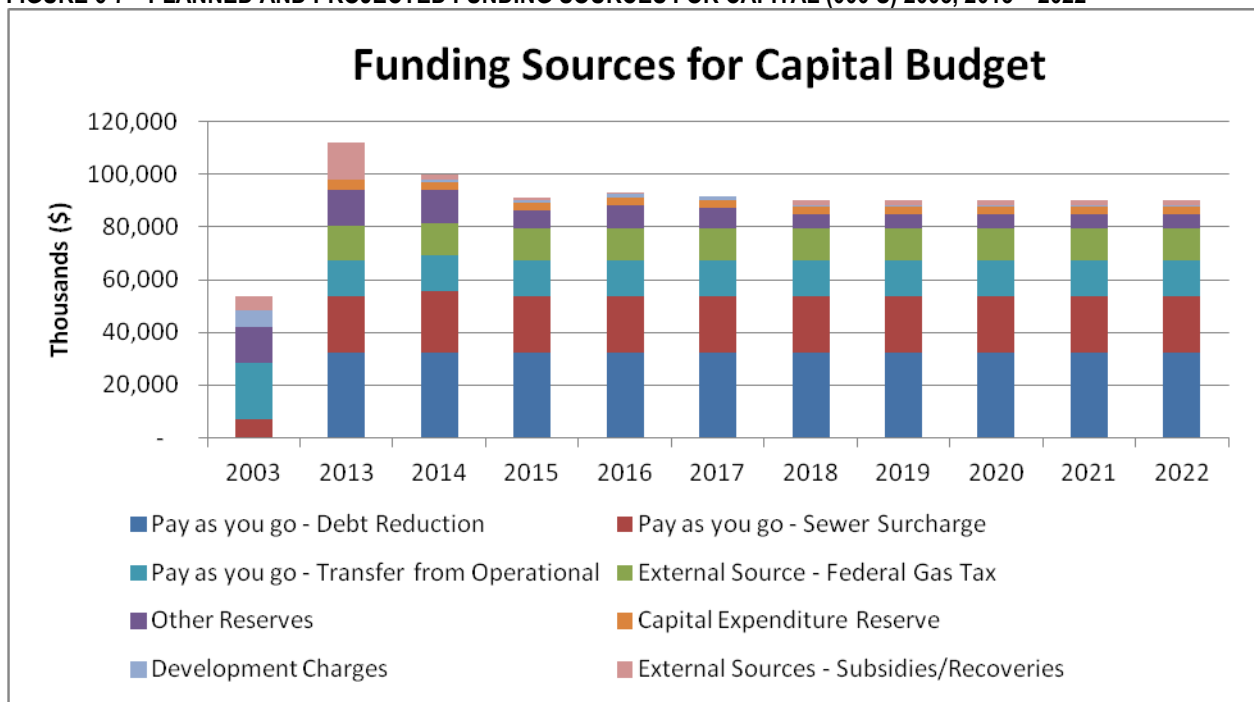
- Capital Expenditure Reserve
- Development Charges Reserves
- Other Reserves

**External Sources**

- Provincial Transit Funding
- Federal Fuel Tax Funding
- Infrastructure Stimulus Funding (ISF)
- Recreation Infrastructure Funding (RInC)
- Developer Charges
- Other One-time
- Third-Party Recoveries

Funding sources available for capital over the 2014 – 2022 planned periods are detailed in Fig. 6-7 below. 2019 to 2022 have been held at 2018 funding levels at this time. However, it should be noted that the current funding sources projection will likely be adjusted once Council has had a chance to review the AMP and strategize on its future infrastructure funding strategy. It is clear, however, that to successfully deal with the infrastructure deficit, municipalities will need significant ongoing reliable funding help from the senior levels of government.

**FIGURE 6-7—PLANNED AND PROJECTED FUNDING SOURCES FOR CAPITAL (000'S) 2003, 2013 – 2022**



## 6.5 The Infrastructure Gap

The difference between the amounts of funding required to maintain our assets in a reasonable state of repair, compared with the currently available capital funding over the next ten years is referred to as the Infrastructure Gap.

The initial value for the required funding is the current replacement value of all those assets that have been categorized as *Very Poor* in 2013 plus what is anticipated to become *Very Poor* by the end of 2014. This equates to a starting value at \$386 million, (or 7% of the total value of assets), based on 2012 replacement cost. Over the 2014 – 2022 Plan period further assets will move into the *Very Poor* category. The pace at which these assets are deteriorating is dependent on the typical useful life of the assets the associated operational and maintenance regimes and the environmental conditions the assets are subject to; and the continually evolving methodologies for asset maintenance and replacement. Therefore on this basis, for long life assets such as sewers, roads and bridges, we would not expect a significant proportion of the asset base to move into the *Very Poor* category over the next 10 years. Our experience is that these assets in many cases have useful lives well past their design life. For shorter life assets such as some fleet, IT and plant and pump station items, a much larger proportion of the assets are expected to deteriorate significantly over the 2014 – 2022 Plan period. Again, however, the pace of deterioration will be influenced and dependant on similar factors as those noted for the longer life assets.

For longer life assets such as roads, in addition to the assets considered *Poor* moving into the *Very Poor* category over the Plan period, there is also a large percentage of the asset base currently categorized as *Fair* (35% of the total Transportation assets, by value) that will shift into the *Very Poor* category just beyond the Plan period unless proactive measures are taken relative to maintenance, innovative technologies and funding allocations.

**FIGURE 6-8—PRELIMINARY CITY OF WINDSOR INFRASTRUCTURE GAP**

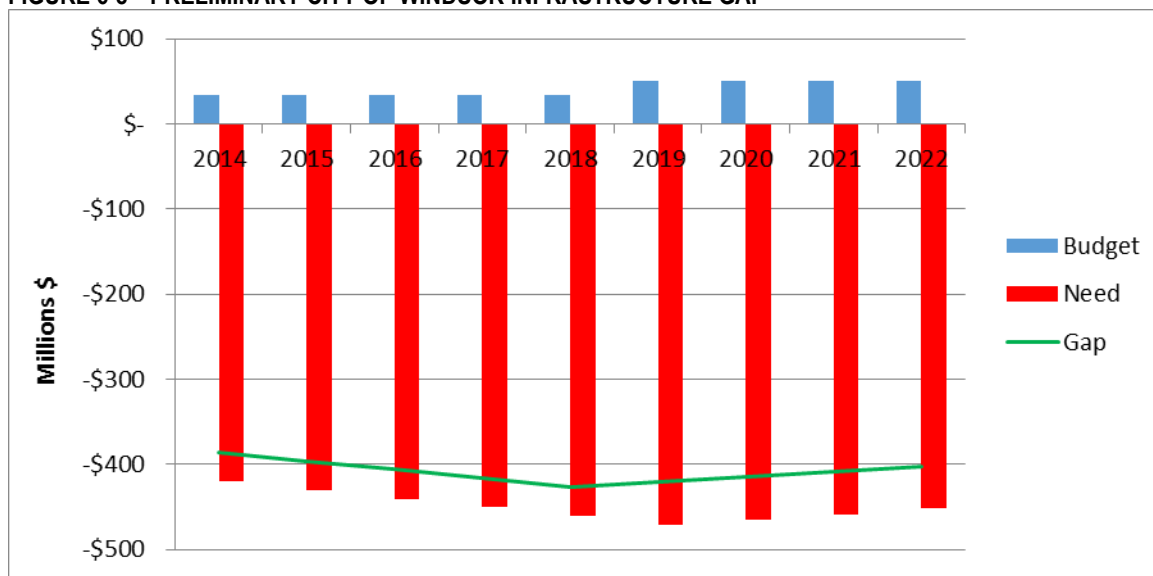


Figure 6-8 above displays the following information:

- The Total Required Investment Need (red bars) is the investment required to address those assets categorized as being in very poor condition, including those expected to become very poor from 2014 to 2022. Therefore, this includes not just the annual requirement, but, as well, the accumulated deficit.

- The Total Planned & Projected Capital Funding (blue bars) is the funding available that the City is currently planning to spend on Life Cycle Renewal of its infrastructure. As indicated, these funding levels are subject to change based on Council's review of the AMP and the strategic decisions emanating from that review. This amount is determined via one of two methods:
  - Where the service area identified their capital budget as funded solely from Reserve/Reserve Fund draw downs, the Reserve balance at the end of 2012 is sustained and only additional reserve funding is applied to the deficit so as to not deplete our reserves.
  - Where the service areas life cycle capital budget is funded from multiple sources, the service area's life cycle capital budget projections for 2014 to 2022 are used.
  - Where the service areas life cycle capital budget is funded from multiple sources, the projected increase in funding for infrastructure of \$16M in 2019 from Debt Reduction Funds was proportionately applied to those assets based on their replacement cost.
  - The Total Planned & Projected Capital Funding is also reduced from 2014 to 2018 by the funding allocated for placeholder projects approved in 2013, after which 60% of that amount is assumed to be allocated back to maintenance activities in support of addressing the infrastructure need.
  - The Cumulative Infrastructure Gap (green line) is the difference between the Total Required Investment and the Total Planned Capital Funding (blue bar minus red bar). For assets which received an allocation of the projected \$16M increase in 2019 the reader will notice the green line trending in a positive direction.

It is important to note that this is only the baseline gap, i.e. this is the current estimate of the gap prior to the assessment of how improved asset management practices, such as enhanced maintenance regimes and adjustment of levels of service (LOS), use of innovative technologies, or the application of other funding mechanisms can reduce the gap.

Detailed in the table below is a breakdown of current and estimated future Infrastructure Gap by Service Area.

**TABLE 6-4—2014 AND 2022 INFRASTRUCTURE GAP BY SERVICE AREA BREAKDOWN**

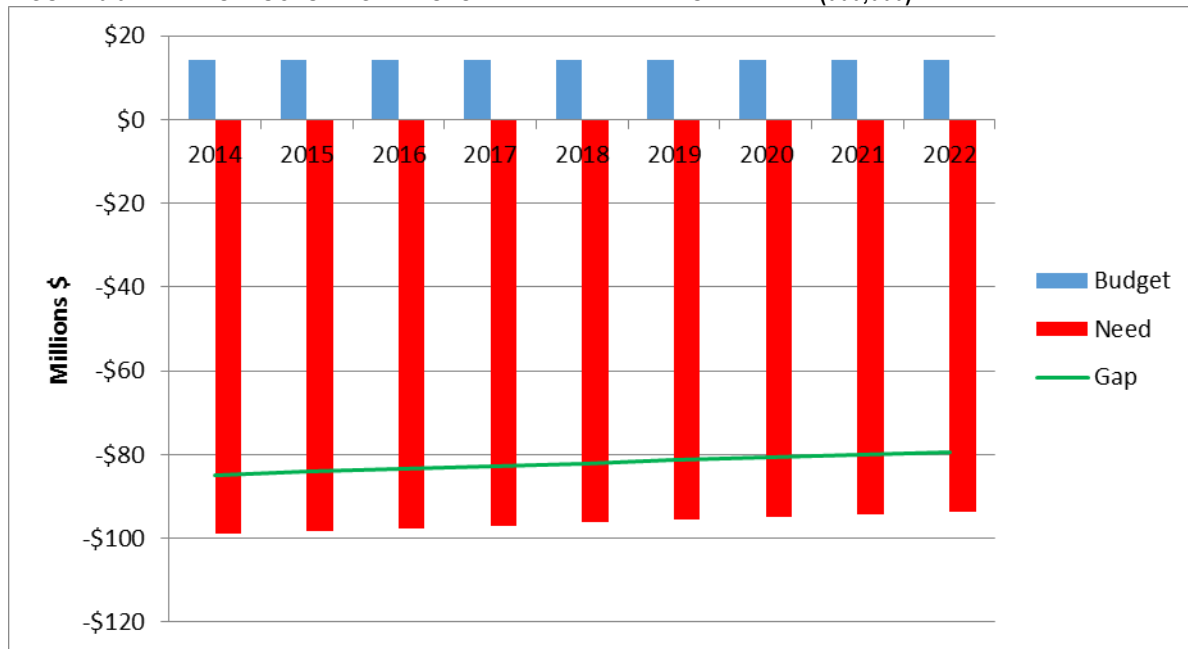
Service Area	2014 Gap	2022 Gap
Environmental Protection - Storm Water & Wastewater	\$84,775,086	\$79,296,775
Transportation Services	\$158,931,055	\$175,638,672
Corporate Fleet Management	\$438,371	\$1,196,750
Corporate Facilities Management	\$130,161,798	\$136,120,221
Information Technology	\$183,726	\$401,127
Environmental Protection- Parks	\$11,780,528	\$9,308,398
Total Infrastructure Gap	\$386,270,564	\$401,961,943

As can be seen from the above breakdown of the City's total Infrastructure deficit, the largest infrastructure deficit remains in the Transportation Services, Environmental Protection and Corporate Facilities service areas. Within the Transportation Services area it should be noted that roadways and paved alleys are the largest contributor to the infrastructure gap. A detailed breakdown of the infrastructure needs specific to these key service areas are presented in subsequent sections.

### 6.5.1 Environmental Protection—Storm Water and Wastewater

Assets included in this category are: sanitary and storm sewer networks, pump stations, municipal drains and water treatment plants.

**FIGURE 6-9—INFRASTRUCTURE GAP – STORM WATER AND WASTEWATER (000,000)**

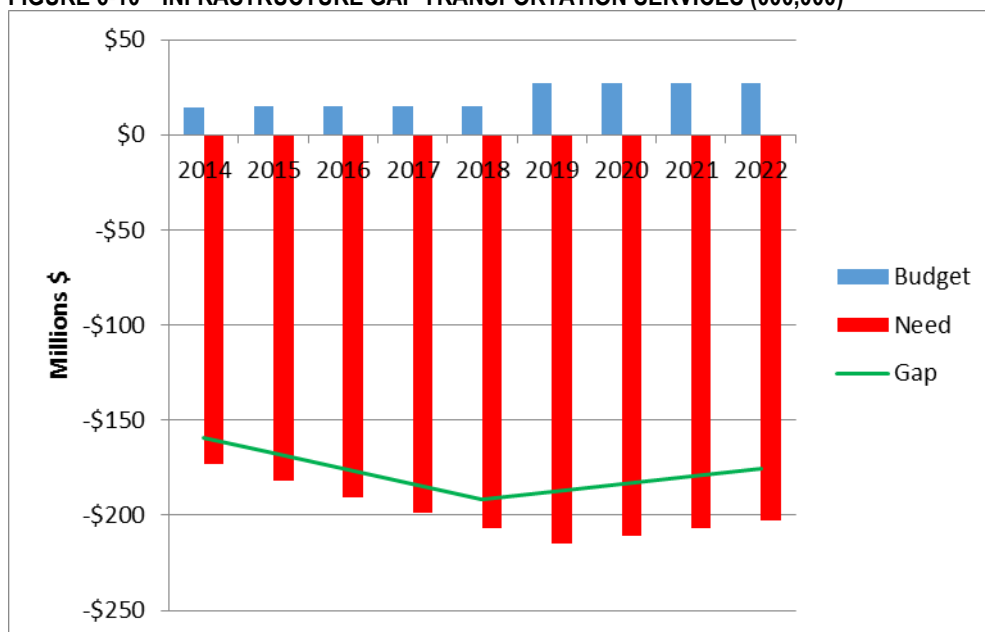


The strategy to increase the Sewer Surcharge funding from 2003 to 2013 has allowed the deficit for this category to be reduced by an estimated \$5.5M from 2014 to 2022. While this is a positive statement it should be tempered with the awareness that at the start of 2014 the pump stations and plants sit with \$85M in Fair condition. By comparison the total Very Poor and Poor for these assets at the start of 2014 is only \$92M. Future versions of the AMP will revisit these projections to correct and verify assumptions, particularly on the anticipated decline in condition based on design life. However, our past experience is that the actual usual lives of these assets tend to be longer than the expected design life.

### 6.5.1.1 Transportation Services

Assets included in this category are: roads, paved alleys, sidewalks, structures, signals, noise barriers and parking garages.

**FIGURE 6-10—INFRASTRUCTURE GAP TRANSPORTATION SERVICES (000,000)**



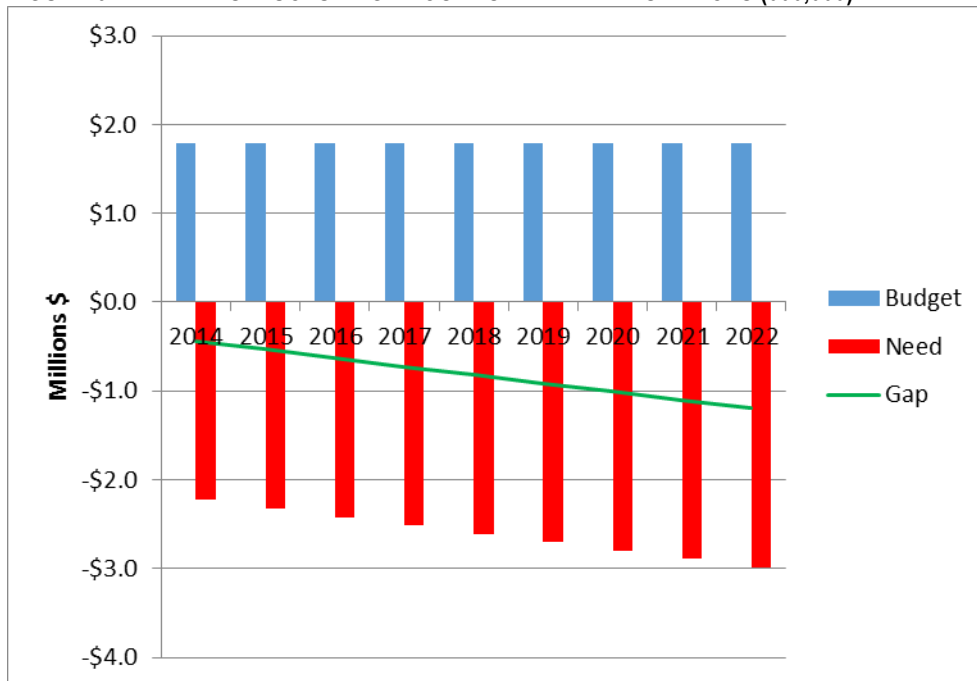


The single largest asset in this category is roads. Although Federal Gas Tax is dedicated to this category our funding from the federal government has decreased in 2014 and is projected at the lower level going forward. In 2019 it is estimated that \$16M in additional Debt Reduction pay as you go funding will be allocated to infrastructure deficit. The increase available budget shown above is a result of the estimated portion of the \$16M to be used for transportation assets. This summary assumes funding levels to implement asset management strategies identified in Section 5 will be sustained to help manage the deterioration of the assets. It should also be noted that the value of the transportation assets in Fair condition in 2014 is \$857M, which is more than both very poor and poor by \$492M. As this category begins to age, it is likely to put pressure on the funding requirements and to implement various asset management strategies that extend the life of these assets, and slow the rate of decline.

### 6.5.1.2 Corporate Fleet Services Infrastructure Deficit

Assets included in this category are: corporate fleet, small fire vehicles and fuel sites.

**FIGURE 6-11—INFRASTRUCTURE GAP CORPORATE FLEET SERVICES (000,000)**

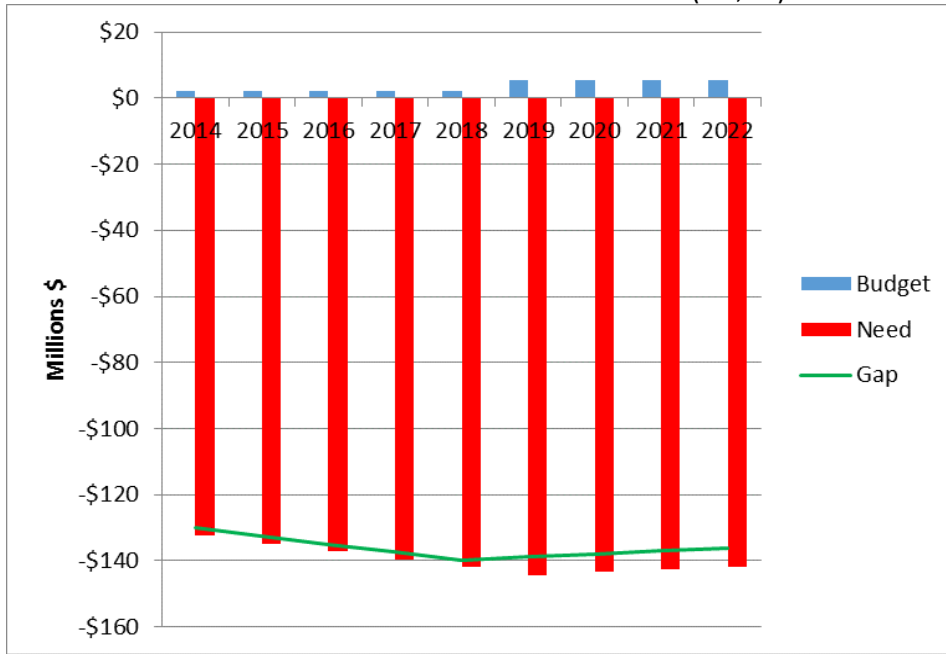


Fuel sites, which are included in this category solely account for this projected infrastructure deficit. The dedicated reserve funding for corporate fleet is in line with the expected need for those assets over the 2014 – 2022 period. It should be noted that the quantum of the deficits in this category is quite minor as the gap is less than \$1 million currently.

### 6.5.1.3 Internal Services—Corporate Facilities

Assets included in this category are corporate facilities.

**FIGURE 6-12—INFRASTRUCTURE GAP CORPORATE FACILITIES (000,000)**

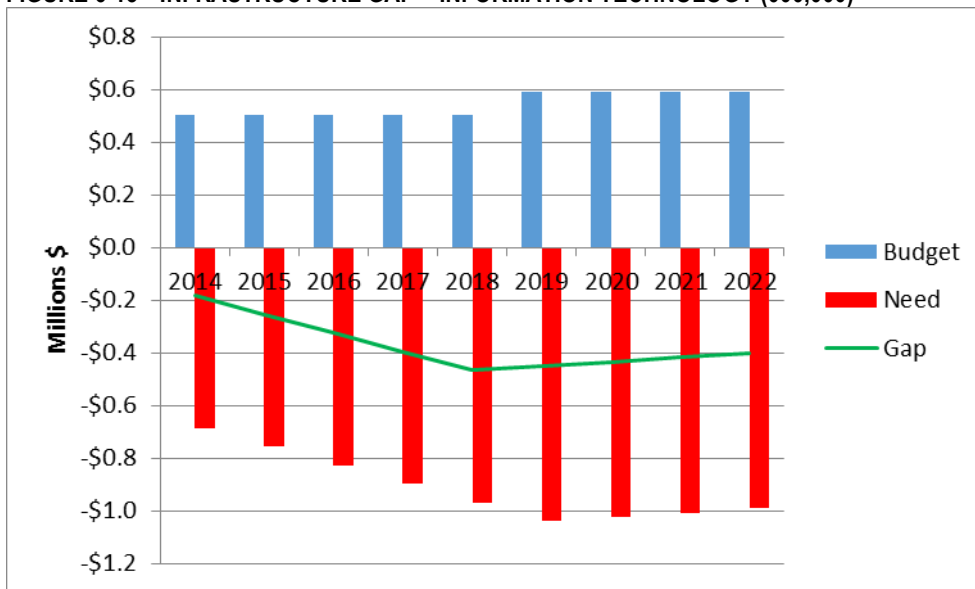


There is a need to look further at this asset group including ; consolidating assets to reduce the overall portfolio; obtaining objective building condition assessments, including focusing on major building components (i.e. HVAC, elevators, electrical, roof, windows); incorporate levels of service for the various facility types; and clarify the impact accessibility standards will have on this asset type, to provide better data on what funding level would be needed to extend useful life of the assets, reduce risk and meet service level expectations.

#### 6.5.1.4 Internal Services—Information Technology

Assets included in this category are personal computing, network and data storage.

**FIGURE 6-13—INFRASTRUCTURE GAP – INFORMATION TECHNOLOGY (000,000)**



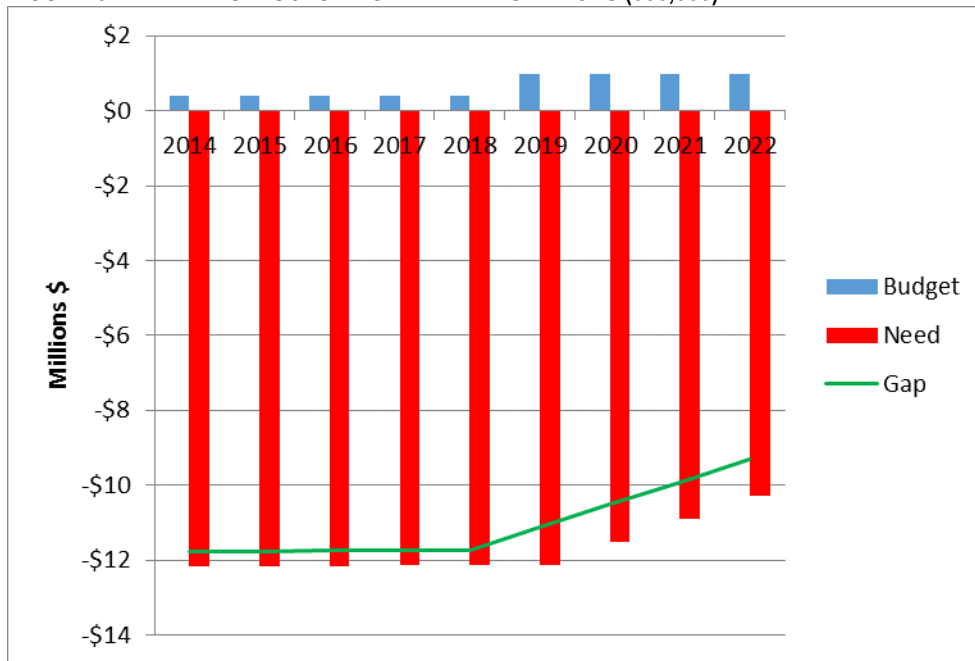
The total value of these assets is significantly less than many others. As such when the portion of the projected \$16M increase in 2019 is applied to these assets there is a transition to reducing the overall infrastructure gap for the asset. Technology assets however are further complicated by the pace in which technology changes. Defining levels of service for technology will assist in future versions of the

AMP to project funding needs which result in changes in service level demands as well. It should be noted that the deficit in this category is quite modest as the total gap is less than \$1 million.

### 6.5.1.5 Environmental Protection—Parks

Assets included in this category are shore walls, playgrounds, sports fields, trails, parks equipment, park bridges, parks parking lots, spray pads and fountains.

FIGURE 6-14—INFRASTRUCTURE GAP – PARK SERVICES (000,000)



The reduction in the infrastructure gap should be tempered with the understanding that this assumes the portion of the projected \$16M is allocated to parks. It is noted, however, that this does not address any increased service level expectations in the parks program. As stated previously there are also several assets in parks which are not currently identified such as forestry and horticulture assets, naturalized areas, various assets such as benches, garbage containers, planters, land improvements and other asset types which contribute to the overall cost of maintaining and sustaining our parks and green ways. Parks are recommended as one of the first asset types to be reviewed for levels of service. It is anticipated that the compliance with accessibility standards required by 2025 will have a significant impact on the service level requirements of these assets and has the potential to drive the infrastructure gap back up. Future versions of the AMP will provide further clarity on these variables as well as recommended strategies to address them.

## 6.6 Strategies for Addressing Funding Shortfalls

### 6.6.1 Asset Management Strategies

The infrastructure deficit as shown in Section 6.5 is based on those assets currently categorized as being in *Very Poor* condition along with the addition of those assets that will become *Very Poor* within the 2014 - 2022 planned period.

By adopting the asset management practices and strategies as covered in Section 5, the Infrastructure Gap can be partially mitigated. An example of this could be to review the current LOS across the different classes of roads. Currently regardless of the class of road, the Technical Ratings assigned to each of the condition descriptors e.g. *Very Poor*, *Poor* etc., is the same for all road classifications. Therefore a Technical Rating of 30 – 100, equates to *Very Poor* regardless of whether the road is an Expressway or an Alley. This level of service may be acceptable for an alley but is likely not acceptable for an expressway. By being more granular when setting LOS, the actual funding gap may be reduced.

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Adjusting the Technical Rating bands for different road classifications, would result in certain assets in that class currently classified as *Very Poor*, being reclassified as either *Poor* or *Fair*.

Other strategies include the rationalization of assets where there may currently be two assets in very poor condition which could be replaced by one, thereby significantly reducing the total replacement cost.

However any potential changes to LOS would only be considered as part of a thorough review of service levels across Service Areas.

Another approach to mitigating the scale of the current Infrastructure deficit is to obtain better condition and performance data on our assets and to gather this data at a more granular level. This would enable us to better estimate which elements within the asset are actually in *Very Poor* condition. By doing this our future estimates of the infrastructure deficit would only include those parts of the assets classified as *Very Poor*. This is in contrast to the current approach which assumes that the complete asset is *Very Poor*. An example of this is a building classified as *Very Poor*, because of a very poor HVAC system but with other building components being in reasonable condition.

With regard to the further deterioration of assets causing them to move into the *Very Poor* category, there are a number of maintenance approaches available that the City has been investigating. If applied at the correct point in an assets lifecycle, these approaches can slow down the deterioration process and therefore lessen the growth of the Infrastructure Deficit. These maintenance activities are normally funded from a combination of the Capital and Operational budgets and may, in the short term, require enhanced funding for a period of time. The City will also need to continue its reactive work while enhancing its proactive maintenance approach (i.e. addressing the *Very Poor* assets, while also carrying out preventative work on the *Poor* and *Fair* condition assets). However decisions on the selection of optimum maintenance activities should be made on a lowest whole life cost basis. By adopting a more proactive approach to the management of its assets, the City will realize significant cost savings over the useful life of these assets.

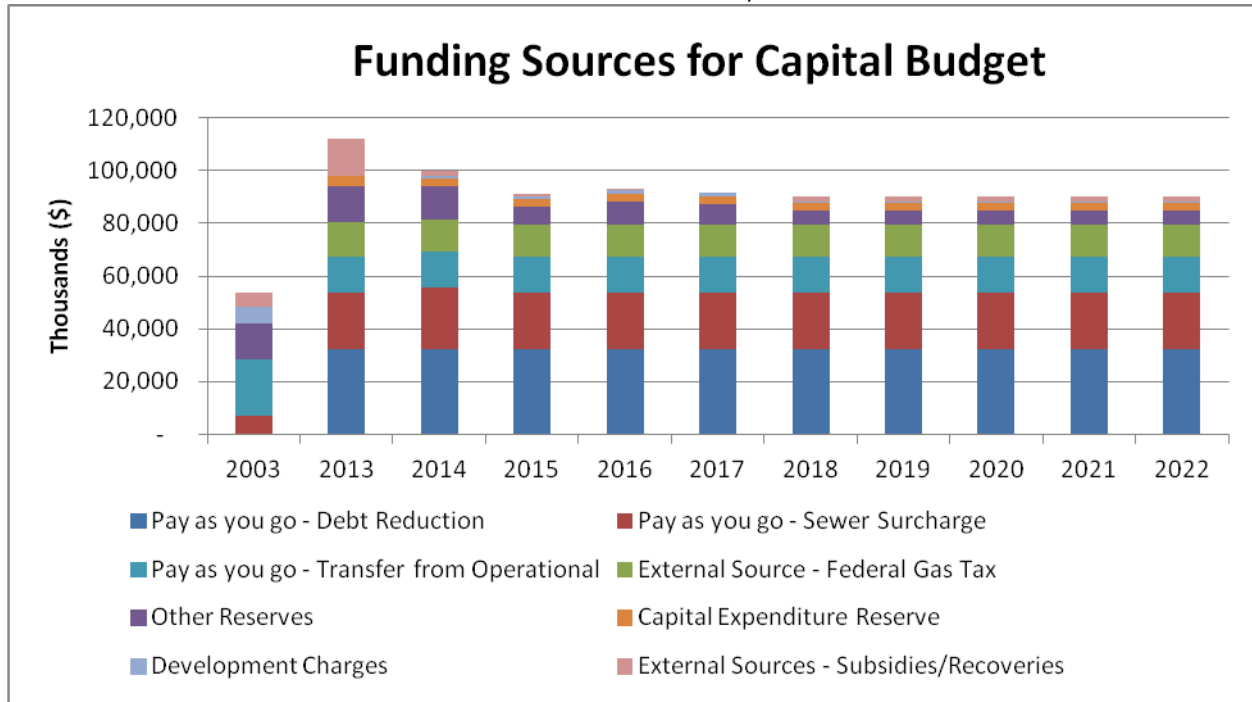
These approaches will be reflected in future version of the AMP, as the City further progresses its asset management program.

## **6.6.2 Funding Options**

The City of Windsor's current credit rating, as provided by Moody's Investor Services, is an AA credit rating. As noted within the Moody credit rating report, this is a reflection of the city's "prudent debt management and conservative fiscal planning."

Currently the planned funding sources for the Capital Budget are further detailed in Figure 6-15 below.

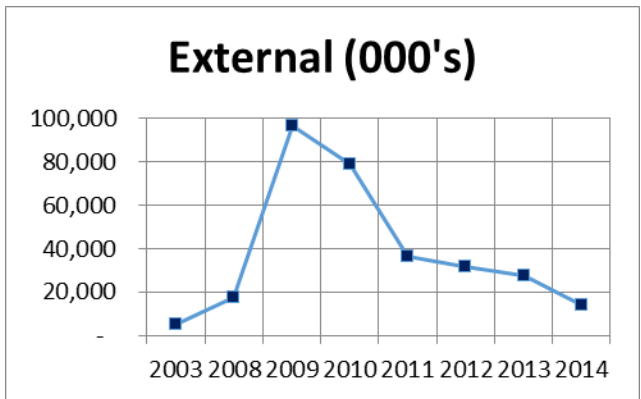
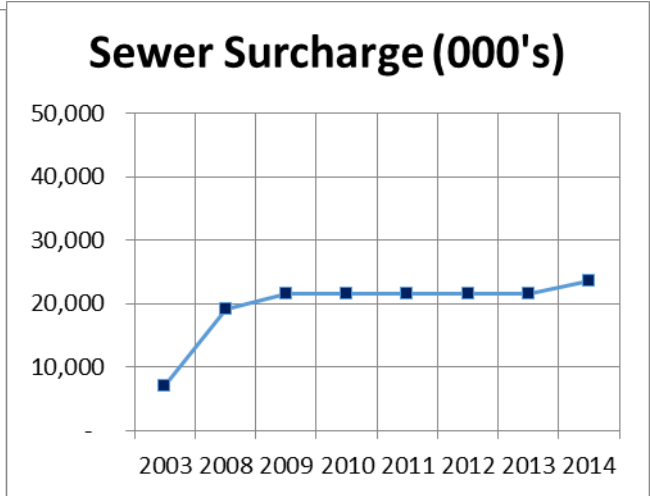
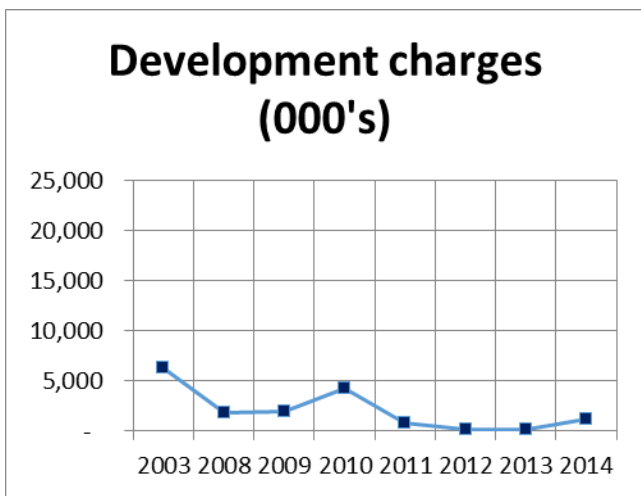
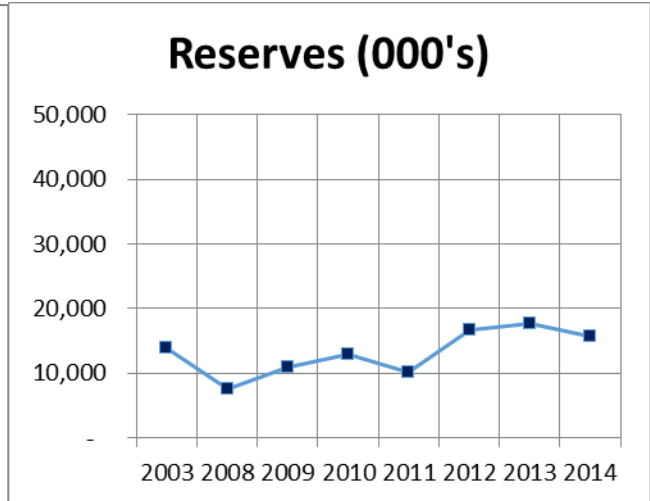
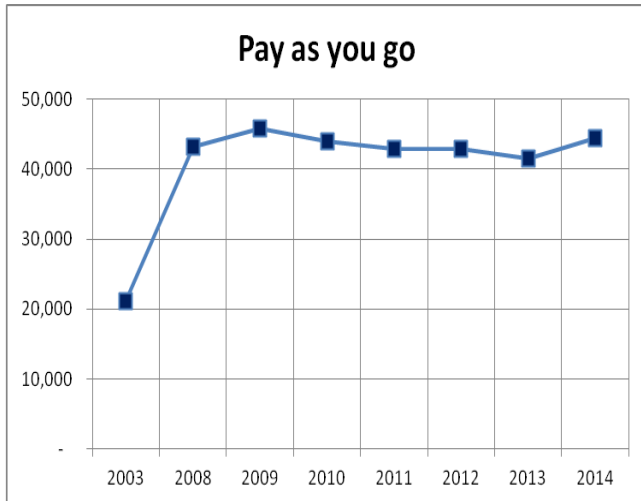
FIGURE 6-15—TOTAL CAPITAL BUDGET BY FUNDING SOURCE – 2003, 2013 – 2022



As can be seen in the figure above, the City currently plans to keep the funding source mix relatively stable over the Plan period. This may change following the Council review of the AMP. However, this needs to be viewed in the context of past financial strategies that have significantly altered the funding mix and a view to putting in place a more sustainable approach to funding the capital program. The very significant increase in capital expenditures is clear when one compares the 2003 funding to the current funding levels.

The following Figures 6-16 and 6-17 show the change in funding sources for the City of Windsor over the past ten years. Sustainable funding for storm water and wastewater, by means of sewer surcharges, has substantially increased funding required for addressing needs within this asset class. The result is evident in the Infrastructure Gap section figure 6-8, which shows a slight ability to reduce the gap for this asset based on a sustainable funding strategy. External funding sources are actively pursued by the City, and the spike in this funding was a result of the City making strategic decisions to push forward future year's projects in 2009, 2010 and 2011 to take advantage of ISF funding opportunities. External funding has started to trend down since that time, with decreases to federal gas tax being a more recent impact to the available funding for capital expenditures. The focused effort to use pay as you go funding has allowed the City to reduce the overall debt while continuing to increase our overall Capital Budget expenditures. This can be seen in Figure 6-16 which shows the change from 2003 to 2014 funding levels.

**FIGURE 6-16—CAPITAL BUDGET FUNDING SOURCE HISTORY – 2003 – 2014**





**FIGURE 6-17—CAPITAL BUDGET FUNDING SOURCE HISTORY – 2003 – 2014**

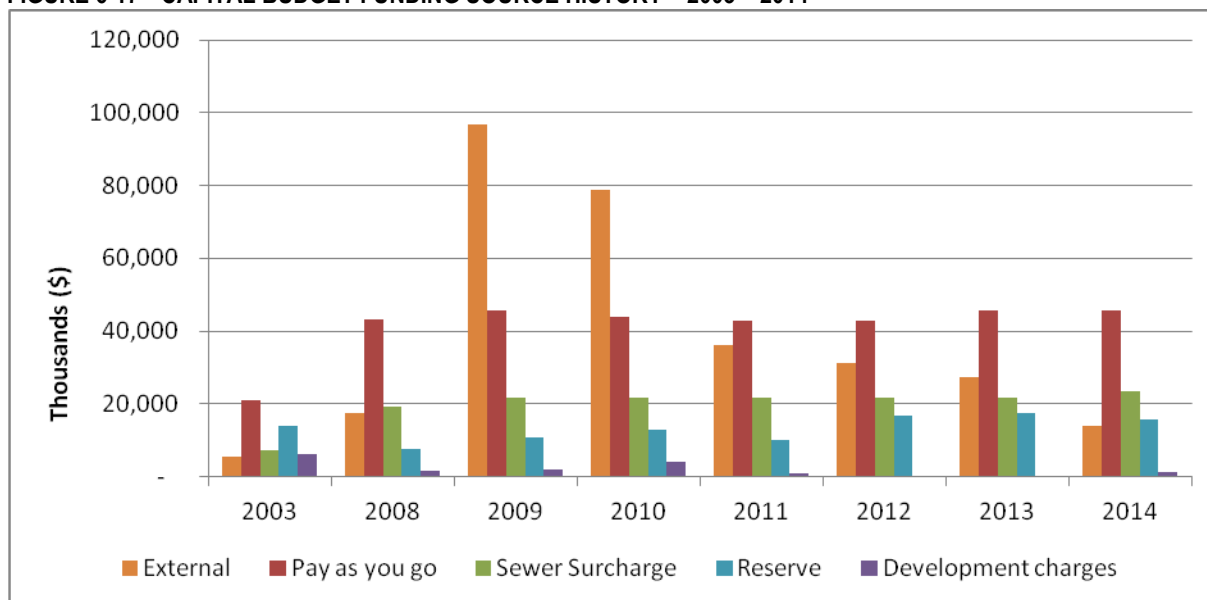


Table 6-5 shows the trend of funding mix for capital over the last decade as well as a suggested target ratio for 2022.

**TABLE 6-5—PROJECTED SCENARIOS FOR FULL FUNDING**

Source of Funding	2003 Funding Source	2014 Projected Funding Source	2022 Projected Funding Source
Pay-As-You-Go	39%	45%	47%
Sewer Surcharge	13%	24%	18%
Corporate Reserves	26%	16%	18%
Development Charges	12%	1%	1%
External Sources	10%	14%	16%

Despite the positive trends from the sound financial strategy decisions made over the last decade by City Council, as with all other cities in Ontario and Canada, the City continues to struggle with infrastructure deficits. This underlines the need for sustainable, predictable, and ongoing funding help from the senior levels of government who have access to a much broader array of revenue streams. Municipalities rely on the property tax base almost exclusively, and this revenue stream is not adequate to fund the full amount of the infrastructure gap. With regard to addressing the Infrastructure Deficit, the City has a number of funding alternatives available for the capital program.

Sewer surcharge is now a fairly healthy source of funding for wastewater and related capital. By holding the current sewer surcharge contribution steady in the face of increasing overall expenditure the result is that it would be a decrease as a percentage of the total capital funding. Development Charges are expected to increase, however there is limited land in which to develop on within the City. As such it is not expected that the growth in Development Charges, compared to the increasing overall expenditure, would result in a change in the percentage it contributes to the total capital funding. The three areas of focus to increase as a percentage of overall contribution to capital funding are pay as you go, corporate reserves and external sources.

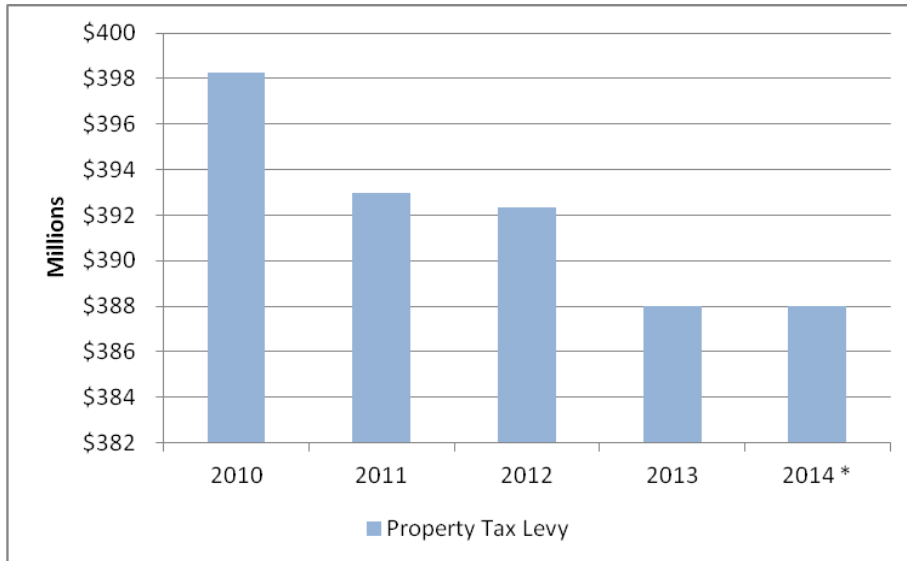
### 6.6.2.1 Pay-As-You-Go

This amount has increased from a level of \$21M in 2003 to the current level of \$44.5M.

As can be seen from Figure 6-19, the City has been holding the line on taxes over the last several years. This was necessitated by the significant economic challenges faced by the region. However, this reduction has not come at the expense of the City's contributions to the capital budget. It should be

noted that reductions in the Property Tax Levy as seen in Figure 6-18 were not achieved through reductions in transfers to capital. As stated above funding in pay as you go has increased by \$23.5 million since 2003. Following Council's consideration of the AMP report consideration will need to be given to further enhancing the capital funding from this source. The fiscal restraint practiced by Council over the last few years (see Figures 6-20 and 6-21 below) has positioned it to be able to consider ways of enhancing the funding contribution from this source. In this respect, the recommended 2014 budget contains a \$3 million increase in the pay as you go funding contribution to the capital fund for \$15 million over the 5-year capital plan.

**FIGURE 6-18—CITY OF WINDSOR TOTAL PROPERTY TAX LEVY**

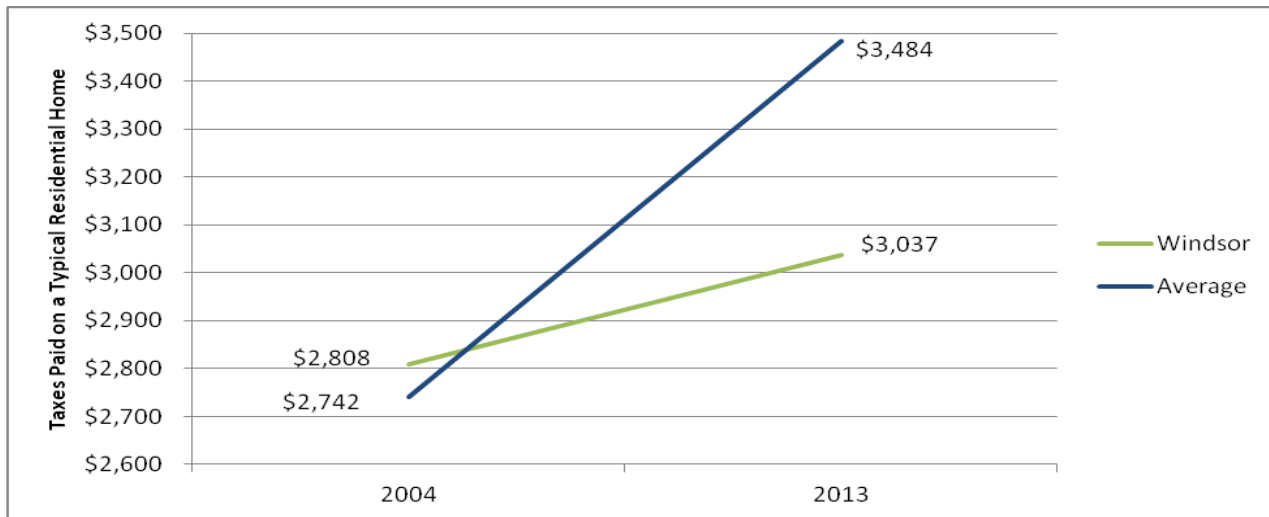


\*Estimated as the Province has not yet announced the 2014 Education Levy

**FIGURE 6-19—BMA CONSULTING COMPARISON OF PROPERTY TAX RATES OF WINDSOR IN COMPARISON WITH OTHER CITIES**

**Taxes Paid on a Typical Residential Home – 2013 vs. 2014**  
**2013 BMA Study, Municipalities with Population > 100,000**

Year	Windsor	Average	Windsor as a % Over / (Under) the Average
2004	\$2,808	\$2,742	2.4%
2013	\$3,037	\$3,484	(14.7%)



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### 6.6.2.2 User Fees

User fees, such as transit fees, entry fees for recreation centers etc, are another source of revenue which can help the City increase its 'pay as you go' funding of capital projects. This funding source has to be used judiciously as significant increase in user fees can disproportionately affect lower income residents and lead to inequality and social exclusion. User fees also need to take into account the competitiveness with surrounding municipalities. Currently the City has some user fees that fund capital reserves that in turn fund capital maintenance or replacement of assets. It is expected that consideration of an expansion of this funding methodology will take place once Council has considered the AMP.

### 6.6.2.3 Reserves and Reserve Funds

The City has corporate Reserves and Reserve Funds that are used to fund the City's capital program. Funding for these reserves is obtained from various sources with, the three primary sources being:

- Capital reserves
- Development charges reserves
- Other reserves

The annual reserve transfers from the operating budget are based on forecasting the financial requirements to sustain reserve balances at target levels sufficient to address asset replacement costs in the future. This includes taking into account the inherent uncertainties associated with future capital funding requirements. Reserve transfers are evaluated on an annual basis to ensure that funds are allocated to reserves and meet future capital requirements while at the same time minimize the impact on the operating budgets, which are the source of the reserve fund payments.

Reserves play a critical role in long-term financial planning. The benefits of having reserves available for infrastructure planning include:

- The ability to stabilize tax rates when dealing with variable and sometimes uncontrollable factors
- Financing one-time or short-term investments
- Accumulating the funding for significant future infrastructure investments
- Managing the use of debt
- Normalizing infrastructure funding requirements

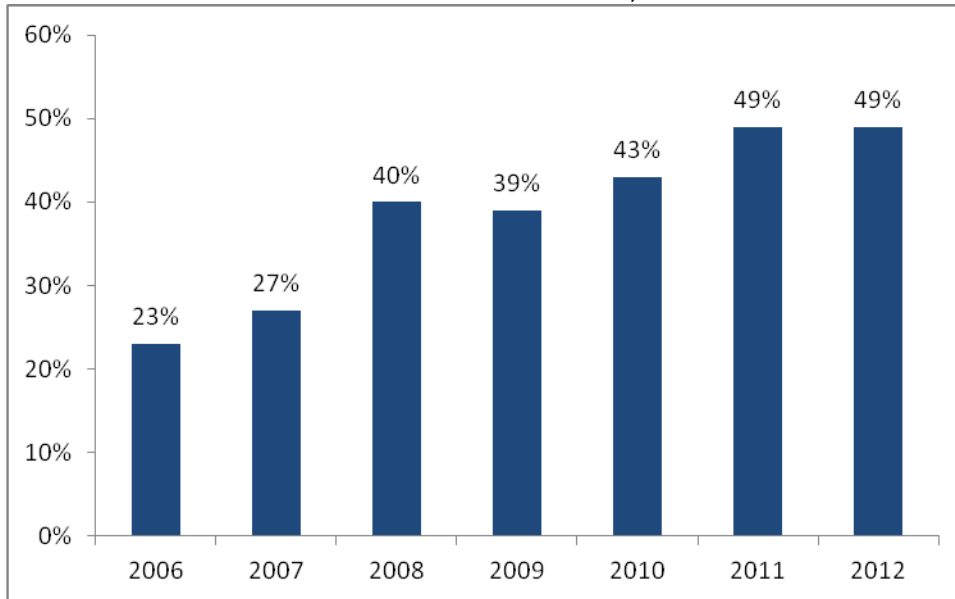
In recent years the City has allocated most of its reserve funding to major lifecycle maintenance activities, used to renew assets and extend their useful life. However, as the assets age further, renewal may become less viable and more assets will need to be fully replaced, which require higher levels of funding.

The City of Windsor's Reserves balances as a percentage of tax revenues have grown from 23% to 49% since 2006. The increased use of reserves as a capital funding source is a potential option for partially addressing the Infrastructure Deficit.

Factors that the City should take into account when determining the future capital reserve requirements include:

- Breadth of services provided
- Age and condition of infrastructure
- Use and level of debt
- Economic conditions and outlook
- Internal reserve and debt policies

**FIGURE 6-20—BMA STUDY FOR ONTARIO MUNICIPALITIES, RESERVE AS % OF TAX REVENUES**



The City will further review the levels of reserve funding as there is the potential for an increase through various investment strategies. The City's prudent financial management to date has allowed increases to reserves which will facilitate future funding discussions. The City has a Reserve Enhancement Strategy in place which currently directs \$3.2 million in incremental transfers to the City's reserves on an annual basis. This will help address the issues and will be a critical component of the funding decisions that will need to be made following Council's review and consideration of the AMP.

#### **6.6.2.4 External Sources**

##### **Debt Funding**

The Province sets a debt-capacity guideline for municipalities which is currently 25 per cent of the individual municipality's revenues. The City operates a prudent debt reduction strategy where the aim is to reduce debt and re-invest the interest savings for the purpose of increased pay as you go funding of capital projects. Windsor's Debt to Reserves Ratio is currently at approximately the median. As debt continues to decrease, it will free up more funds to invest in the City's infrastructure. The City's preferred methodology is to continue to reduce debt and re-invest the interest savings into additional capital projects funding. Nonetheless, all potential funding sources will be considered where appropriate.

Historical, current and projected debt levels are shown in Figure 6-21 below.

**FIGURE 6-21—LONG TERM DEBT SUMMARY (000,000)**



The City of Windsor's debt profile has improved significantly since the implementation of its debt reduction strategy, as shown in the Figure 6-21 above.

Since 2002, the issuance of debentures has no longer been a preferred option for the City. The City has chosen to fund nearly all of its major capital works via "pay as you go" funding, reserves, grants and subsidies. The only significant exception was the approximately \$40 million of debt issued to help fund the \$110 million upgrade and expansion of the Lou Romano Water Reclamation Plant. This debt management strategy has allowed the City to manage and significantly reduce their debt levels. Evidence of the success of this strategy can be seen in Figure 6-21, showing the current projected debt at \$515M had we continued issuing debt. This strategy has allowed the City to re-invest interest savings in the pay as you go funding of capital projects. This funding source has increased from \$21 million in 2003 to \$45.5 million currently.

### Grants and Subsidies

Grants from the Provincial or Federal government are also used to finance capital with such ongoing funding agreements as Gas Tax revenue. However, many grants are a result of stimulus or other one-time funding that may be more difficult to forecast. Generally grants are included in the budget forecast when confirmed.

Grants and subsidies have proven to be invaluable with regard to infrastructure sustainability and growth for the City, and Windsor's past innovative approaches in combining this funding source with other funding sources has been particularly successful.

The City will continue to pursue grants and subsidies where possible, however this is not a source of funding that can be easily forecast and therefore cannot be relied upon when assessing options for addressing the Infrastructure Deficit.

As previously noted, municipalities will require ongoing, predictable and sustainable funding help from senior levels of government if they are to successfully deal with the infrastructure deficits that are currently prevalent.

### Development Charges

Development Charges (DCs) are collected by the City from developers under the City's DC Bylaw. DC's are used to finance the development (growth) share of the capital program and are stored in designated DC reserve funds until they can be used to pay for growth-related infrastructure as prescribed in the

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City's DC Bylaw. Projections relating to DC revenues are based on DC rates and the projected growth in residential and non-residential units.

The City of Windsor has an existing supply of serviced lands available for future residential, commercial and industrial uses which are expected to meet the projected need over the next 5 years. Additionally, though the economy has started to improve and is becoming more diversified, significant population and job growth is not projected for the City over the Plan period. Therefore, DC's are not considered to be a significant source of funding that could be relied upon to meaningfully address the infrastructure gap.

### **Public Private Partnerships (P3)**

Public Private Partnerships are a capital project delivery method whereby a public entity, such as the City, partners with a private entity for the purpose of delivering public infrastructure. Typically this involves the use of a design build team, a maintenance firm and a lending firm. The private entity will then design, build, finance, maintain and/or operate the facility for a set number of years, agreeing to meet specified performance criteria set forth by the City, in exchange for lease payments or some other compensation. At the end of the specified period the asset or facility would then be returned to the City.

This source of funding will continue to be considered for appropriate projects as Council looks to address its infrastructure funding requirements.

### **Public / Public Partnerships**

These types of partnerships are capital projects delivery methods whereby two or more public entities co-operate for the purpose of delivering public infrastructure. The City has successfully engaged in this practice in the past on a number of projects (for example with the Town of LaSalle for the expansion of the Lou Romano Water Reclamation Plant).

The City will continue to explore avenues for these types of partnerships that provide significant benefits and cost savings to all partners.

## **6.7 Summary**

Based on the City's current funding strategies, we are confident that we will be able to hold the level of Infrastructure deficit relatively stable over the Plan period. This does not mean that we will be improving the overall average condition of the assets, but that the percentage of assets in each of the condition categories will look very similar at the end of the Plan period to what it does currently. Therefore for some of our citizens they will see an improvement in the assets in their own vicinity, while others could see a corresponding decline in the condition of assets. Improvement of the overall condition of its assets, for example by reducing the percentage of assets in the *Very Poor* category will involve a consideration of enhanced funding from both the municipal and senior levels of government.

Specific decisions relative to the required enhanced funding will need to be made based on the adoption of a comprehensive funding strategy following review of the AMP and as the senior levels of government funding commitments are clarified.

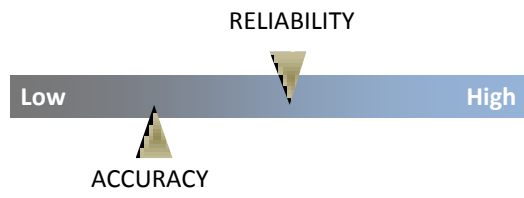
## **6.8 Data Gaps and Recommendations**

In the first version of this Plan, a comprehensive detailed analysis of increased funding methodologies and its direct impact on the funding shortfall has not been included. However this will be a focus area as part of the improvement of the AMP and therefore will be featured in future versions of the Plan.

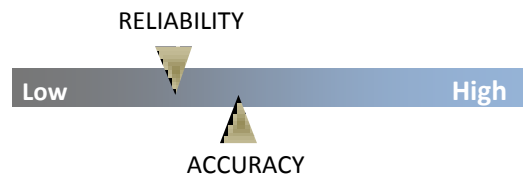
In compiling the data for this Section, it should be noted that the current capital budgeting process only contains information for the first five years of the 2014–2022 Planned period. It has therefore been assumed that the level of funding after year five will be similar to the first five years. This has resulted in varying levels of data confidence within this section as shown per Figures 6-22 and 6-23.



**FIGURE 6-22—CURRENT FINANCIAL DATA CONFIDENCE RATING FROM 2013- 2018**



**FIGURE 6-23—CURRENT CONFIDENCE RATING FROM 2018+ AND BEYOND**





Section 7  
Plan Improvement and  
Monitoring





SECTION 7

# Plan Improvement and Monitoring

This section outlines the improvement and monitoring program to enhance future revisions of this plan and the associated asset management strategies and financial projections.

## 7.1 Improvement Plan

This asset management improvement plan was generated from a combination of the following:

- The gap analysis of the City’s current asset management capabilities and competencies carried out in 2010 (see Appendix F for detailed Asset Management Roadmap), combined with;
- The gaps in data and processes that became evident during the development of the first version of this Plan

The proposed infrastructure and asset management improvement plan tasks are shown in Table 7-1. Funding has been previously approved for asset management related projects. The projects listed below will be reviewed by the Asset Management Network for timing due to resource availability and priority. Suggested project priority and allocation of available funding will be presented to the Asset Planning Steering Committee for review and confirmation of direction.

**TABLE 7-1—IMPROVEMENT PLAN**

Task No.	Task	Responsibility	Resources Required	Timeline
1	Update and revise the Plan to reflect changes in the asset portfolio and business practices	Corporate Asset Planning	Internal	Annual—part of the Business Plan and Budget Process
2	Develop Corporate Level of Service practices— corporate template, procedure and process	Corporate Asset Planning	External and Internal	Q3 2014
3	Level of Service development for—roadways and parks	Parks, PW Operations, Corp Asset Planning	Internal and External	Q4 2014 to Q2 2015
4	Develop Corporate Life Cycle Costing practice—template, procedures and policy	AM & CMMS Network, Finance and Corp Asset Planning	Internal	Q4 2014
5	Develop a Business Process Master Plan for each Service Area.	AM Network, Asset Planning	Internal and External	2017
6	Develop Asset Management Plans for each Service Area	AM & CMMS Network and Corp Asset Planning	Internal and External	2017
7	Develop a Business Case Evaluation Framework	AM Network, Finance and Asset Planning	Internal and External	Q2 2015
8	Develop a more robust approach to investment prioritization within and across Service Areas	AM Network, Finance, Asset Planning	Internal	2016
9	Asset Data: Develop a Corporate data improvement plan, including establishing evaluation policies and schedules for all asset groups, for the collection of 100% objective or engineering based data	Corp Asset Planning, CMMS network, Finance.	Internal	Q3 2014

**TABLE 7-1—IMPROVEMENT PLAN**

Task No.	Task	Responsibility	Resources Required	Timeline
	Review CCTV program and identify areas of opportunity to expand objective data for high risk and challenging sewers to review providing better information for planning and funding needs, i.e. trunk and forced mains.	PW Operations and Corp Asset Planning	Internal	Q3 2014
	Develop a comprehensive plan for the management of parks asset data including but not limited to condition ratings and replacement cost data for all Parks Services assets	Parks, Finance and Corp Asset Planning	Internal and External	Q4 2014
	Develop and implement a comprehensive plan to break down facility data in TCA to major components, with condition and replacement cost at those levels and tying back to Facility 360.	Facilities, Finance, Asset Planning	Internal and external	Q4 2015
	Develop and implement a comprehensive plan to disaggregate sidewalk assets in TCA to align with Hansen data.	Finance, PW and Asset Planning	Internal and external	Q4 2014
	Support Antero upgrade to ensure future alignment with AMP development at operational and corporate level	PW and Asset Planning	Internal and External	Q4 2014
	Develop strategy and approach to address various assets out of scope for first version of AMP	AM & CMMS network, Asset Planning	Internal	Q3 2016
	Update Hansen with new subjective ratings	PW, Finance and Asset Planning	Internal and external	Q3 2014
10	Expand use of City Wide Capital Budgeting and Planning to being to marry capital budget requests, approvals and impacted assets	Finance, Asset Planning, AM network	Internal and external	Q4 2014
11	Develop Project Delivery & Project Management Guidelines	AM Network, Finance and Asset Planning	Internal	2015
12	Establish a suite of Asset Management procedures and guidelines that will guide and standardize the practice of asset management across the City	AM Network and Asset Planning	Internal and External	2017
13	Development of a Risk assessment tool.	AM Network, Asset Planning and Enterprise Risk	Internal	2017

It should be noted that these are preliminary projections that may be subject to significant variability.

## 7.2 Plan Review and Monitoring

### 7.2.1 Plan Review

Once adopted, this plan will become the City of Windsor’s plan for the effective and efficient management of its assets. It has been developed to, as a minimum, meet the Ontario Ministry of Infrastructure requirements as set down in the ***Building Together: Guide for Municipal Asset Management Plans*** document. This plan will remain current until replaced by an updated plan.

This Asset Management Plan is a living document which is relevant and integral to the daily Asset Management activities at the City. To ensure the plan remains useful and relevant, the following improvement and monitoring activities are to be progressed:

- Formal adoption of the plan by Council



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- Review and formal adoption of levels of service (next phase of the Asset Management work plan)
  - The Corporate AMP, as a whole, is expected to be updated and communicated to Council every 5 years. Specific sections of the report will be updated as required based on new asset data, information and decisions, and will be communicated to Council as they occur.
  - Quality assurance audits of asset management information to ensure the integrity and cost effectiveness of data collected.

## **7.2.2 Plan Monitoring**

The following indicators will be monitored to measure the effectiveness of this Plan.

- Compliance with legislative requirements
- Quality of Services Delivery –100% compliance with service targets or targets exceeded.
- Capital project delivery outputs delivered to schedule (or better) and on budget (or better)
- Operational and maintenance budgets met (or better)
- Quality of Risk Management—No events occurring outside the risk profile.
- Benchmarking with comparable City's—Maintain performance



Section 8  
Appendices



