



Asset Management Governance Project

Asset Management Philosophy and Framework

Final Report

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City of Windsor

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Abbreviations and Acronyms

ALM	asset lifecycle management
AM	asset management
BCE	business case evaluation
CAMRA	comprehensive asset management review and assessment
CAPEX	capital expenditure(s)
CIP	capital improvement (or investment) program
CMMS	computerized maintenance management system
CWMS	computerized work management system
KPI	key performance indicator
LCC	lifecycle cost
LOS	level(s) of service
O&M	operation and maintenance
OPEX	operating expenditure(s)
RCFA	root cause failure analysis
RCM	reliability-centered maintenance

RPM reactive and preventative maintenance
SCADA supervisory control and data acquisition
TBL triple bottom line

1. Introduction

1.1 Background

Public infrastructure is central to our prosperity and our quality of life. The City of Windsor provides a wide range of services to the community that require the ownership and responsible operations, maintenance and rehabilitation of physical assets including land, buildings, equipment, transportation, drainage, sewer and water infrastructure.

The City's challenge is to ensure cost-effective management of these assets in a changing regulatory environment, where rate pressures, property taxes and public scrutiny are paramount considerations, legacy infrastructure is aging, and both environmental and social sensitivity are necessities.

Resolving Windsor's infrastructure challenges begins with improved asset management. The City views this as a prerequisite for a productive discussion with the community about sustainable solutions, including funding and affordability.

Asset Management (AM) is an integrated approach, involving all City departments, to effectively manage existing and new assets. The intent is to maximize benefits, reduce risks and provide satisfactory levels of service to the community in a sustainable manner. Good asset management practices are fundamental to achieving sustainable communities.

The City has begun to implement asset management (AM) with the expectation that it will make the City, its staff, and its services the very best. Although full realization of all of its enterprise-wide asset management (AM) goals is still many years away, departmental AM initiatives have been implemented in a number of areas (e.g. Public Works, Facilities, Fleet) and have already resulted in benefits to the citizens.

The City of Windsor has been developing its corporate AM program since 2009 when we embarked on an AM Governance project. Since that time, many of the recommendations have been implemented including the creation of a corporate Asset Planning Division. The City's recent AM journey is reflected in the following documents, developed through the new Asset Planning Division:

- Current Asset Management Readiness Assessment – 2010
- Asset Management Governance Strategy – 2010
- Asset Management Philosophy and Framework – 2010
- Asset Management Roadmap – 2010
- Corporate Asset Management Plan – 2013
- Levels of Services Template and Process – 2014
- Corporate Asset Risk Assessment Template and Process – 2015

- 20 year Roads Needs and Funding Assessment – 2015

Current priorities for further development of the AM Program include:

- Developing an Asset Management Policy that strengthens the links with sustainability
- Developing Lifecycle Management templates and processes
- Development of 2018 Corporate Asset Management Plan
- Developing a business case evaluation process that assesses the social, economic and environmental benefits and risks of projects.

The City is continuing to methodically cement a holistic AM culture and approach by: forming consensus around a core philosophy that incorporates a triple bottom line basis for creating value; implementing key AM processes; building staff understanding and confidence; and celebrating early gains. In the future, City intends to regularly assess and track progress on its AM journey and benchmark the program to itself and other cities.

The following corporate Vision and Mission Statements provide the basis for City's AM philosophy:

Vision

The City of Windsor will endeavor to be a leader in achieving a sustainable community by balancing environmental, social and economic values with a view to the future.

Mission

The mission of the Windsor AM program is to implement comprehensive AM practices that strive to: build a sustainable community for current and future generations; deliver efficient and effective services; manage the overall cost of asset ownership; protect the environment; support staff and stakeholders in decision making; communicate a common purpose such that all actions are unified in pushing a path of progress; and support the use of current and accurate information to best manage all community assets and serve all customers.

Definition

The following definition of asset lifecycle management has been adopted by the City and fully meets the needs of our vision and mission for asset management:

Asset Lifecycle Management is an integrated set of processes that minimize the lifecycle costs of providing (planning, creating, operating, maintaining, replacing and disposing) networks of assets and other measures to deliver an defined standard of service over the long term at an acceptable level of risk.

1.2 Purpose and Scope

The Asset Management Philosophy and Framework is a governance document in the AM System that sets the Context, Goals and Objectives for AM at the City. It defines the framework for AM practices at the City and the roles and responsibilities for the governance of the AM System. It also contains a detailed vision and philosophy/principles to govern the development and implementation of the AM System.

The asset based services included within the AM System are:

- Water Reclamation
- Facilities and Structures
- Parks, Horticulture, and Forestry
- Fleet
- Arts and Culture
- Finance
- Information Technology Systems
- Storm, and Sewers
- Transportation systems
- Energy Systems

As the asset management program becomes established and advances, it is anticipated that the range of community assets within the scope of the AM System will continue to expand. In particular, inclusion of natural assets and ecosystem services is expected to be an important enhancement to meet the sustainability and climate change resiliency aspirations and obligations of the City.

It should be noted that the focus of the 2018 AMP is ensuring compliance with the pending Ontario Infrastructure for Jobs and Prosperity regulation. The regulation requires the inclusive of all core infrastructure assets, as defined by the pending Ontario Infrastructure for Jobs and Prosperity regulation as well as all other assets which are part of a City's Tangible Capital Asset reporting and listing. Inclusion of all assets reported in the City's 2013 AMP will ensure compliance with this part of the regulation. Expansion of the list of assets and asset categories is expected to be developed for the 2023 AMP as many of those assets are currently in the early stages of developing asset management data and practices and to attempt to bring them into the 2018 AMP may result in less focus on the required assets which must be included for compliance to the regulation.

Each of the service areas within the scope of the AM System manages their assets in an environment with various inputs, goals and priorities. A detailed description of assets is provided in the Asset Management Plans.

2. Asset Management Philosophy

The City's asset lifecycle management philosophy can be summarized as follows:

Asset Lifecycle Management at the City of Windsor will focus on the delivery of cost-effective services to customers – today and into the future. We will make deliberate decisions regarding assets and resources in a transparent manner using decision making processes and criteria that demonstrate clear linkages between the asset programs, and budgets. Asset lifecycle management will penetrate every facet of capital and operational resource allocation decision making, and requires engagement of City Council and the City's workforce at all levels. Key missing practices that must be adopted to become a sustainable municipality include:

1. *Integrated risk management, including climate change awareness and planning for climate resiliency;*
2. *A focus on community and environmental service outcomes in addition to financial sustainability through comprehensive triple-bottom line and life-cycle costing, and tracking and reporting of performance;*
3. *Integrating land use and infrastructure planning practices;*
4. *Integrated and collaborative planning for service delivery across internal and external stakeholders; and*
5. *Documentation of the business case for significant expenditures.*

We think of asset management as synonymous with best-in-class city management and creating sustainable communities.

The key elements of this AM philosophy, and the vision presented below, are discussed in greater detail in Section 3 – Asset Management Framework.

2.1 Asset Management Vision

When fully implemented and practiced in the City's organization, Asset Management will demonstrate the following characteristics and attributes:

- **Customer Focus**
 - Clear understanding of the City's core services and the values and needs of customers..
 - Understanding the City's priorities through established service levels that are clearly linked to the values of elected officials, customers, ratepayers, regulators, regional partners, and other stakeholders.
 - Transparency to stakeholders and customers on the quality and sustainability of current and future service delivery. This will include regular reporting to Council on

current and forecast service performance, cost, and compliance with all relevant legislative, regulatory and statutory requirements.

- Being open and responsive to customer feedback.
- Knowledge of asset emergencies, failures, other incidents, and broader trends such as climate change that impact the City's ability to deliver services and plan proactively how the City can and will respond to these events.
- Decision processes manage the relationships between stakeholders; preserve and develop our story and sense of place; and reflect our culture and values in how we set priorities and resolve our differences.

- **Risk Management**

- Robust understanding of the City's corporate, asset, service, and operational risk exposures, tolerances, and management strategies.
- There is a risk framework in place that has created a common language and terms of reference to enhance dialogue about risk and allow comparison of risk across the City.
- Management and resource allocation decisions are made in a way that achieves defined levels of service and benefit at an acceptable balance between cost and risk.
- Active communication, discussion, and agreement between the City's stakeholders regarding appropriate and/or acceptable levels of asset risk and risk management strategies.

- **Decision Making Process**

- AM decision making and budgets are clearly linked to the achievement of organizational priorities and objectives.
- Decisions are made transparently and deliberately. Decisions are justified and documented. Decision models are developed to ensure consistency, efficiency, and timely decision making use of the right information. The decision processes connect the appropriate departments and service functions to build effective working relationships and the sharing of information.
- Decision-makers at the City understand their role and functional relationships in the decision making process as well as understanding and applying the concepts of AM to their jobs.
- The City explores, presents, and selects alternative solutions to defined problems based on objective data and reasoning, not on intuition, or the most impassioned side of a debate, or ulterior motivation.
- Asset investment decisions are made in an asset system context, not just optimized for each individual asset or project itself. The City considers the inter relationships between services and assets, both in a cross-asset context and within the operational system (e.g. roads vs roads, roads vs water).

- Decisions are based on financial, social, and environmental implications (the triple bottom line, or TBL), and the decision processes are integrated between strategic, tactical and operational levels (integration of short and long term decision making).
- Project drivers, comprehensive problem definition, and alternative solutions are identified, analyzed, and documented early in the asset/program creation or modification process, and reevaluated when appropriate, in order to maximize cost savings and ensure overall implementation success. In particular, the City ensures that proposals for new assets or services go through appropriate due diligence and are evaluated against defined levels of service and sustainability criteria, and that they are supported by a valid business case and cost benefit analysis.
- Decisions on large investments are made only after rigorous analysis of alternatives by appropriate individuals empowered to make important investment decisions. The original project intent is preserved but allows for changes in asset plans when the decision making inputs change.
- **Asset Operation and Maintenance (O&M), Information, and Technology**
 - O&M strategies have been developed and documented based on the City’s asset management principles and framework. O&M Strategies are developed within the parameters set out in the service masterplans and tactical asset strategies.
 - Staff will have greater knowledge of all assets, optimal lifecycle strategies, and the linkages between cost and level of service, and are thus better able to ensure robust and defensible financial planning and management.
 - Staff will have good information about the condition of the assets and a good sense of how the condition of the infrastructure will change in the future.
 - Staff will have reliable information about what it costs to perform the work.
 - Staff will have timely information regarding the achievement of service levels and meeting key performance indicators, as well as any adverse impacts associated with assets, services, or workforce.
 - Staff understand the concepts of AM, appreciate the bigger picture and use their initiative to pursue opportunities for improvement. They have a complete understanding of their role and do not see their job as a series of tasks, but as an essential function that has a deeper purpose to achieve results and fulfill the mission.
 - Staff will have enough information and direction to help them make timely resource allocation decisions and risk mitigation plans.
 - Technology solutions will be driven by City-wide needs and therefore will be coordinated and structured to meet organizational objectives.
 - The City will have effective data systems and core business software tools in place to capture, store, and provide the data and analysis needed to make inform decisions.

- **Employee Engagement**

- There will be team-based culture that is respectful of individuals, abides by basic values and work expectations of the City, and that honors new ideas aimed at improving the City's operations.
- Each employee will understand his or her role in the organization and how it relates to the objectives of the organization.
- Staff will be able to describe their work and explain why they do it.
- Asset Management goals are a natural part of how staff will think, plan and act.
- The City will foster a work environment where people are collaborative, hard-working and analytical. Employees at the City are comfortable in routinely searching for innovation and best practices and are proactive in gaining new skills.
- Employees will understand the organizational objectives, and on a project-by-project basis will be better able to explain the reasons behind the implementation of solutions.
- Employees will seek innovative solutions because there is a clear process for evaluating alternatives and quantifying future benefits of creative solutions.
- Leadership shall model the attributes of collaborative working and making evidence based decisions. They will establish processes that encourage and empower staff to work in cross-functional groups and avoid silo decision making.

- **Organizational Performance**

- The Senior Manager of Asset Planning routinely monitors and reports on the performance of the AM System and service delivery to the Asset Planning Steering Committee, who make thoughtful decisions about how to remedy those areas where the performance should be improved to better meet the needs of the AM System and customers.
- Staff shall demonstrate a stewardship ethic that embodies the responsible planning and management of assets and resources. They will be efficient and effective in project and program implementation and the use of resources, and shall be responsible for their performance.
- The City will provide skills development programs to assure necessary competencies are in place to support the AM System and function as a high-performing organization.
- Staff will track their decisions and their ability to successfully implement approved solutions. Staff will routinely track budget, schedule, scope, and performance outcomes, and use this information to focus improvement efforts.

2.2 Benefits of Asset Management to the Community

Asset management benefits the community in many ways but primarily by more effectively and consistently meeting agreed upon levels of service at the lowest cost of asset ownership. The City will achieve this by:

- Establishing customer outreach and involving stakeholders, including the community and staff, in defining and developing strategies, policies, levels of services, in the decision making concerning the City's infrastructure.
- Monitoring and reporting on service delivery against defined service levels.
- Incorporating TBL and risk in decision making.
- Developing Comprehensive asset management plans to guide investment decisions and demonstrate fiscal responsibility and optimization of strategies.
- Ensuring that the local economy is supported through adequate and competitive taxes and rates, and that those who benefit directly from municipal infrastructure pay for the service whenever feasible.

2.3 Internal Relationships

The City will be adapting organizational capacity, roles and responsibilities, and important work processes as part of the asset management improvement agendas. This involves assuring that cross-functional interests are represented in organizational decision making, on working teams/committees, and by the Corporate Asset Planning Division. The Corporate Asset Planning Division will provide corporate oversight, management, coordination, and sustainability of the corporate asset management program. The Corporate Asset Planning Division in concert with the implementation AM Steering Team, Departmental asset managers (AM Network) will provide process planning, tool development, implementation oversight, and quality control over the work plan. The AM Steering Team will be responsible for establishing and chartering other improvement projects and initiatives and for creating the culture change necessary to ensure a high-performing organization. Other teams will be created as necessary for effective implementation of comprehensive asset lifecycle management. In addition, Appendix 301 describes the City's team-based approach and governance structure for asset lifecycle management development. This team-based approach is proposed to continue indefinitely to support AM implementation.

2.4 Business Context and Alignment

Gaining and maintaining an informed understanding of internal and external business operating environments is critical to maintaining an appropriate and effective AM system. The City currently has a detailed understanding of AM Maturity through the 2010 AM Readiness Assessment and ongoing periodic CAMRA assessments as well as an understanding of the broader business context within which the City operates and the corporate priorities and objectives that the AM System links to.

CHALLENGES to manage

UNEMPLOYMENT RATE	ECONOMIC RESTRUCTURING		LOW GROWTH EXPECTATIONS	KEEPING THE BOOKS BALANCED
Not enough jobs for people who want to work	Decline of Ontario's manufacturing sector	Changing operating decisions of automotive industry	Forecasts for population growth and future development are modest	Making prudent decisions about how much to spend on what while maintaining Windsor's stable financial position

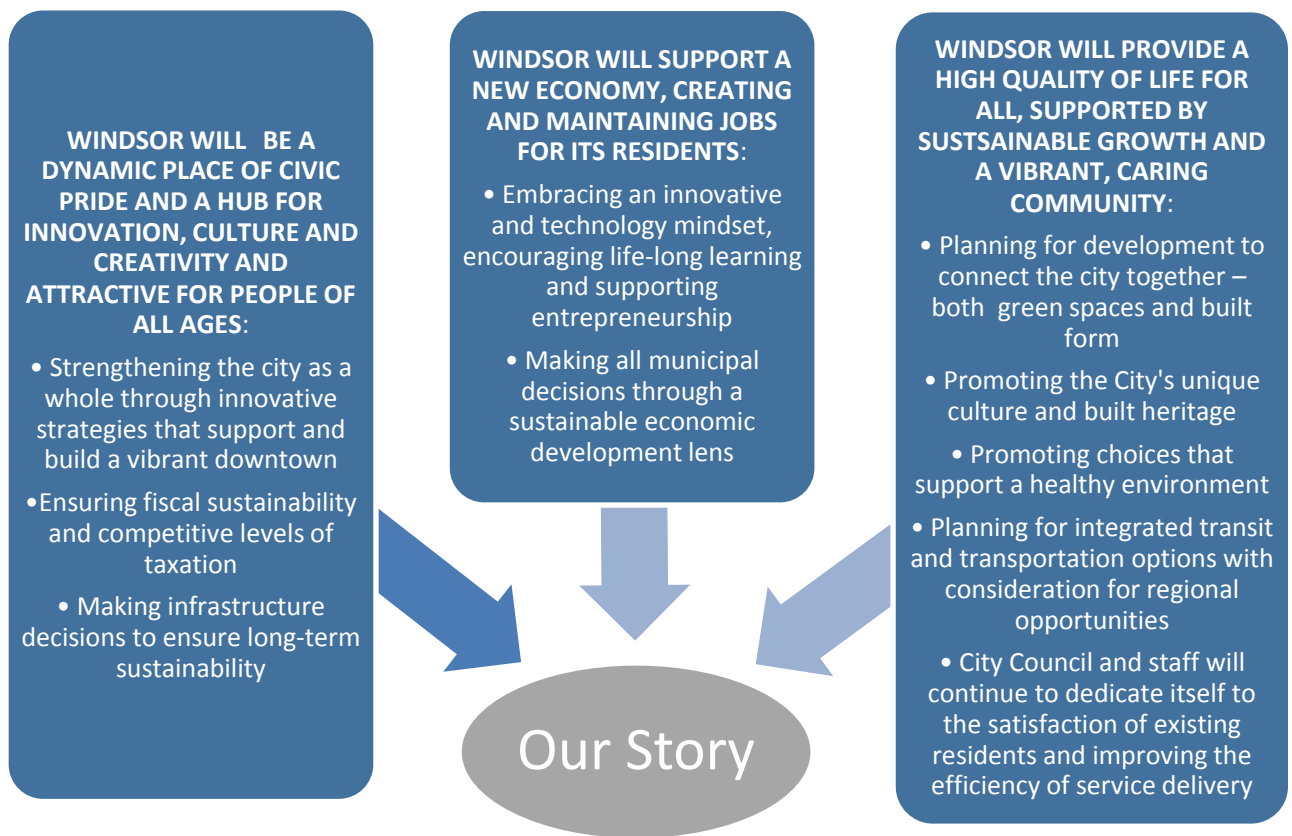
STRENGTHS to build on

STRATEGIC LOCATION			PEOPLE		FISCAL SUSTAINABILITY	QUALITY OF LIFE	
Canada – USA Border and transportation hub	Proximity to markets	Favourable climate and beautiful natural riverfront setting	Biodiversity	Diverse population	Skilled and hard-working labour force	Sound, stable financial position to make decisions	Great place to go to school, raise a family and retire

A primary corporate objective is to strengthen linkages between the Strategic Vision and the City budget through the City's AM decision making processes and criteria:

"Making progress in the future will require making choices – we need to track our progress and tie budget decisions to the Vision".

The corporate objectives that the AM Objectives shall align with are as follows:

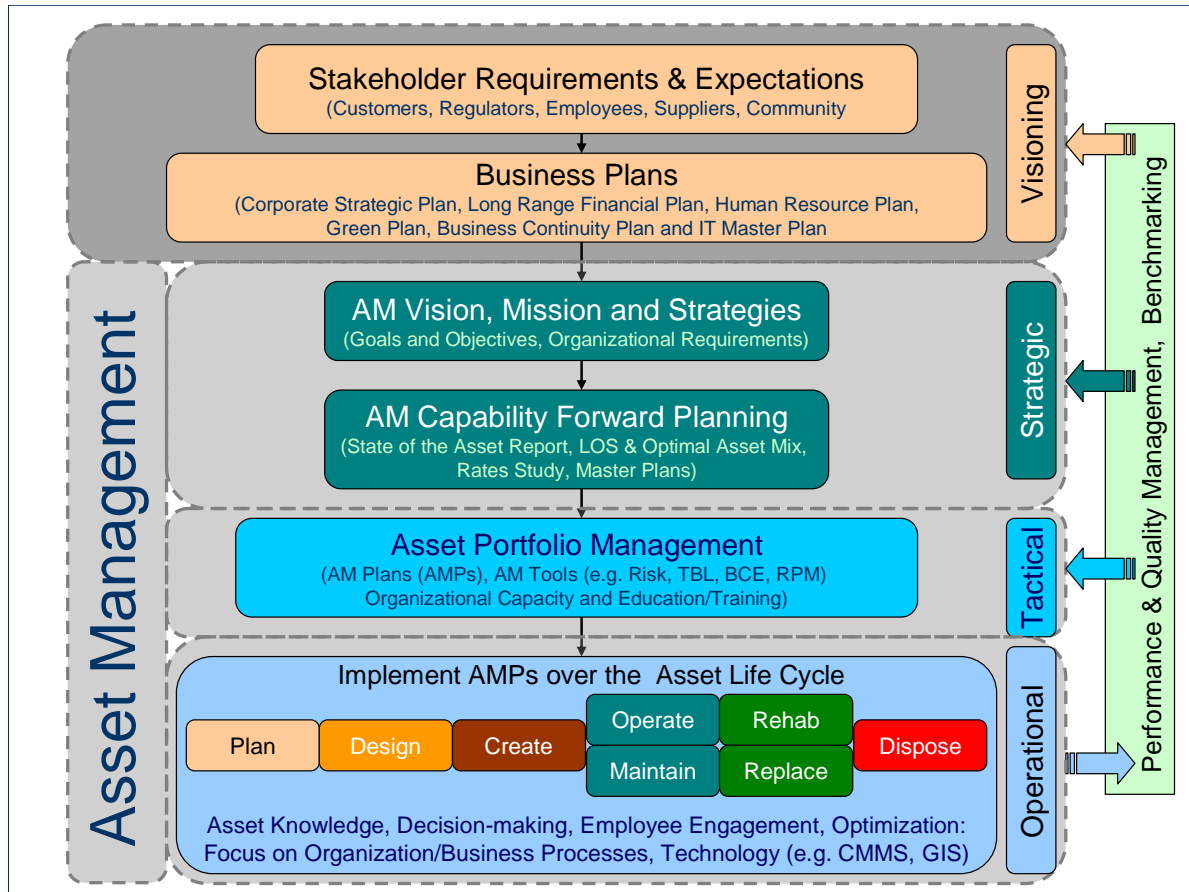


3. Asset Management Framework

The City’s asset management framework describes how the AM Policy and the associated Vision, Mission, Philosophy and Values described above have been implemented and will be sustained. Figure 3-1 provides an overview of the key elements of the framework that will help the City achieve its vision for asset management. The framework combines key concepts from the *International Infrastructure Management Manual*, PAS 55 British Standard for Asset Management as well as developments in the asset management field in North America.

This framework, as further explained below, is the context within which asset management activities and initiatives will occur. It will be updated annually to reflect the current status of asset management within the City. All references listed in the chart below are examples of documents, it is not intended to be an exhaustive list and it should be noted is subject to change.

Figure 3-1
City Corporate Asset Lifecycle Management Framework



3.1 Visioning

The Visioning process will identify the City’s overall mission, vision, values, goals, strategies, actions, and performance requirements. This process will serve to evaluate current and emerging business drivers that would affect the City’s ability to provide cost-effective services. Visioning will help City identify government (legal/regulatory), customer, employee, supplier, and community requirements and expectations. Outputs from this process will govern how the various City departments conduct business and generate the following types of plans: Strategic Plan, Long-Range Financial Plan, Climate Change Plans, Human Resources Plan, Green Plan, Business Continuity Plan, and IT Master Plan.

3.2 Strategic Elements

The Strategic elements as approved by the Mayor and Council will set the asset management policy/strategy goals and supporting metrics and targets, as well as related goals for political and other appropriate stakeholders. At the start of each strategic planning cycle, the Mayor and Council will establish investment priorities and budget parameters.

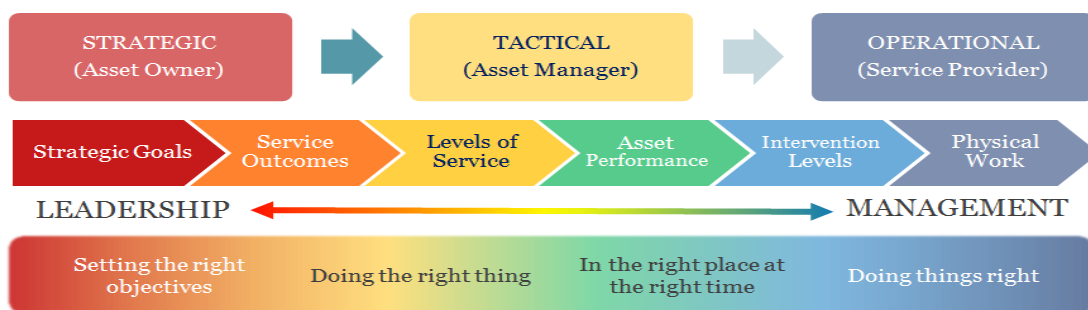
Organizational requirements for effectively managing assets and sustaining the program will be defined. Asset Management forward planning will take place where an optimal mix of assets (new, rehabilitated, and replaced) will be defined to meet expected levels of service. Funding strategies (such as for rates, property taxes and debt financing) will be developed to meet expected expenditure projections.

The outputs from this element will be a State of the Asset Report, Level of Service framework with metrics and targets, a rate structure or property tax structure to meet capital expenditure (CAPEX) and operating expenditure (OPEX) funding requirements, and long-range master plans by major asset classes.

3.2.1 Service Levels

Service levels will be defined as statements of desired performance outcomes that have a high priority to our customers, or are required by regulators; are within the control of the City; and have performance level data that can be collected and audited accurately and consistently.

Figure 3-2
Alignment of Asset Management Goals



Vision

Definition of service levels will consider what is sustainable and equitable for the community across our customer base and over the long term between generations of Windsor residents. Customer surveys, focus groups, and willingness-to-pay studies will be conducted to help set service levels; and customers, Council and staff will clearly understand the rate and property tax impacts of achieving these levels. Information on achievement of service levels will be accurately collected and reported to customers, elected officials, and regulators on a regular basis. Service levels will be set such that they can be monitored and are within our organizational control

3.2.2 Corporate Asset Master Plans

Long-range asset master plans will be developed for all major asset classes (e.g., roads, bridges, water, wastewater, storm water, buildings, vehicles, etc.). These master plans will have, at a minimum, a 20-year outward focus and will be updated on a 5-year basis. These plans will consider existing and emerging business drivers, demand and supply projections, conservation, rehabilitation and replacement of existing assets, and consider new technologies. Some of that information will be taken from the more detailed and asset-specific Asset Management Plans (AMPs) described in the Tactical Elements section below.

AMPs will become the main input for the CAPEX budget and Capital Improvement/Investment Program (CIP).

Vision

Long-range plans for all major asset classes will be updated on a 5-year basis to effectively address current and emerging business drivers.

3.2.3 Funding Studies

The City will develop 20 year sustainable funding models for asset classes which define the expected level of service and risk of the asset class based on various funding levels, which will allow for Council to define service levels. The City may choose to conduct regular rate, property tax studies and willingness-to-pay surveys to inform customers and determine possible funding options to achieve the defined service levels.. These studies should be closely coordinated with funding requirement recommended in the Master Plans developed for the various major asset classes. Such studies will ensure that stakeholders are aware of what is required to manage the assets effectively and also will help City set realistic service levels based on customers' willingness to pay. The studies would also set the stage for exploring other funding sources (grants, debentures, etc.)

Vision

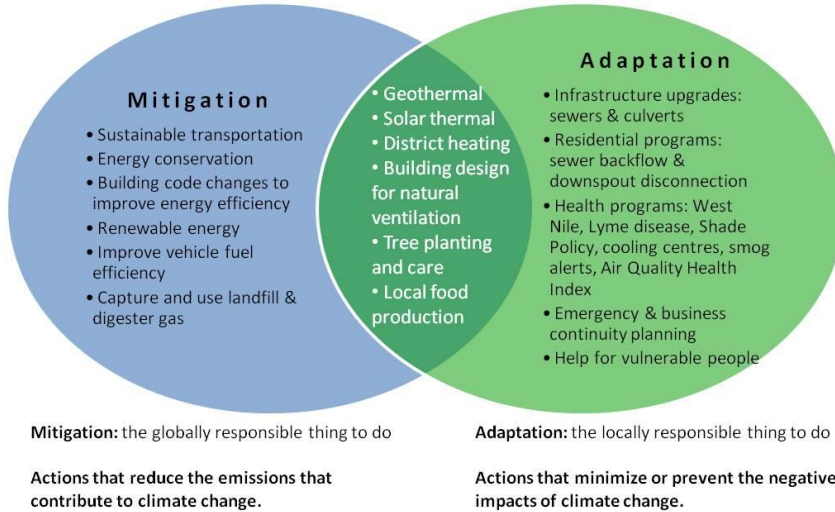
Service levels and associated funding to effectively manage assets will be set based on funding ability through various funding strategies which may include but are not limited to rate and property tax studies, grants, debt, fee for service and customer willingness-to-pay surveys.

3.2.4 Climate Change

An important element of asset management is understanding and managing risks. Climate Change poses a significant risk to many of the critical services delivered by local governments as well as threatens the financial, social and environmental well-being of all communities. The effects of a changing climate have already been felt locally and the City has taken actions to adapt to the unavoidable effects, such as extreme summer heat or an increase in intense rain events, which are expected to continue and intensify. A well-adapted city is able to manage the effects of climate change through the advancement of sustainable policies, infrastructure investment and public education. It also provides an opportunity for innovation and integration of municipal design, planning and operations.

To minimize the extent of future climate change impacts, the City must fully understand the forecast impact of climate change on its infrastructure and all operations (i.e. the degree to which the community and City's infrastructure systems are susceptible to or unable to cope with the adverse effects of climate change, including climate variability and extremes). With this understanding, mitigation and resilience actions can be prioritized and implemented, including reducing greenhouse gas emissions. Fighting climate change also presents economic opportunities and minimizes social disruption.

The City of Windsor has two fundamental response strategies to address climate change; Mitigation and Adaptation:

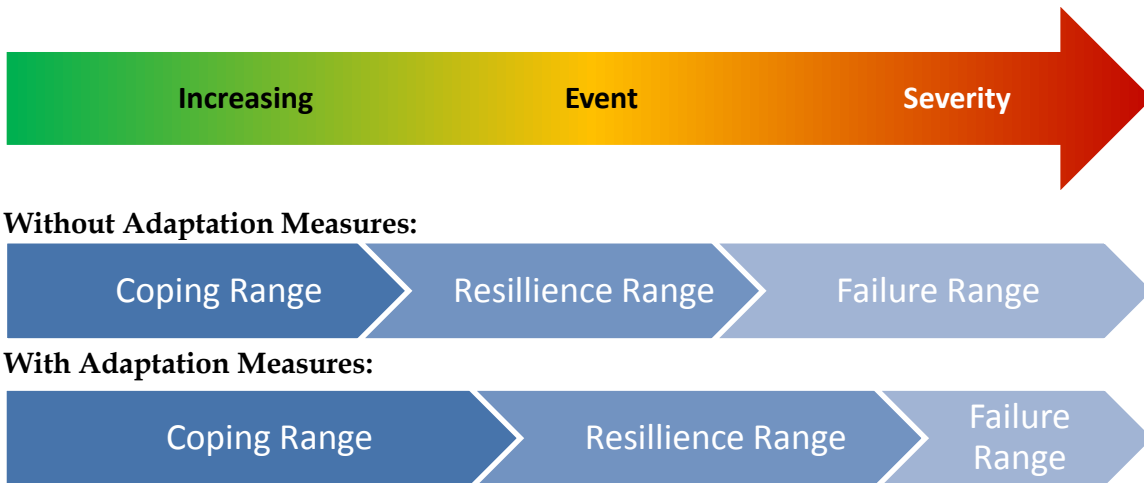


Taken from <http://renewcanada.net/2009/adaptation/>

If you want to include something like this let me know.

WE

The City’s active work on climate change adaptation and mitigation will assist in preparing for the negative impacts of climate change while identifying opportunities to reduce GHG emissions for the benefit the global community. The City is also increasingly engaging community members so they will be empowered to make their own decisions on climate change adaptation, mitigation and resilience:



Vision

Asset management provides a substantial opportunity to address a changing climate over the long-term. Using the best available science and proven innovation along with provincial and federal guidance documents, the City will identify climate risks and determine how these risks may impact a community asset over its intended life. Climate change and

climate change activities or actions must be considered while managing both physical and natural assets, as well as ensuring (or improving) the level of service being delivered.

It will be important to determine how a changing climate may affect the Triple Bottom Line or Life Cycle Costing of a community asset. Measures for mitigating climate change will also be considered. Staff will have a general understanding of how climate change impacts community assets.

What does municipal resilience mean for asset management?

- It reduces vulnerability to climate change impacts by identifying what & where are they? What is the risk? And finally, determining adaptation strategies to limit costs and strengthen resiliency of infrastructure.
- It covers the whole AM process from decision making, design, operation, maintenance and replacement.
- Investment choices can be rethought or reconsidered to implement resilience. This will also best position a municipality to capture the benefits, including funding, of low carbon, climate resilient development.
- Adaptation is a dynamic, context-specific and often long-term process that requires sustained efforts from a variety of actors. Integration can be systematic.
- Asset management provides a mechanism for mainstreaming climate change mitigation and adaptation into infrastructure decisions and development policies.

3.3 Tactical Elements

The Tactical elements will focus on managing the various asset classes and asset types by developing individual asset management plans to meet policy and strategy goals. These plans will define key tactics (with supporting metrics and targets) in each phase of the asset lifecycle (plan, design, create, operate/maintain, rehabilitate/replace, and dispose). The plans will document the answers to the nine questions of infrastructure management (shown opposite). In this section, the City will describe how it will achieve the desired organizational capacity and identify the various tools that would be leveraged to sustain desired asset management practices.

Nine Questions of Infrastructure Management

1. What assets do we own?
2. What are they worth?
3. What is their condition?
4. What service level do the assets need to achieve?
5. What is an acceptable level of risk for the asset?
6. What do we need to do?
7. What is best timing?
8. How much money do we need?
9. How do we fund it?

3.3.2 Asset Management Plans

The Asset Management framework and plan being developed will apply to the City as a whole, and will also contain strategic, tactical and operational guidance for asset classes (e.g.

wastewater, vehicles and roads) and types (e.g. pump stations, roads) of assets. Where the asset class master plans are primarily strategic, these Asset Management Plans will assess the current status of types of assets by:

- Describing asset inventory and attributes such as size, material, age, and condition
- Listing relative service levels and regulations
- Describing current operations, maintenance, and rehabilitation/replacement strategies and models, and assessing the long term impacts of significant trends such as growth, and climate change on the sustainability these strategies and cost of service.
- Characterizing the criticality of assets and the environmental footprint associated with City's operation and ownership of the assets
- Characterizing significant and critical risks and risk tolerance for the asset category, and defining the program for mitigating risks associated with ownership and operation of assets
- Define how projects and maintenance activities are selected and prioritized for the various asset classes
- Outline how various asset classes are managed for service level sustainability including efforts which are operational and or rehabilitation in nature
- Documenting major CAPEX and OPEX initiatives aimed at asset rehabilitation, replacement, enhancement, and improvement to the operations

These plans will become guiding documents as described in the vision statement below that feed into the strategies for data management, condition assessment, operations, maintenance, renewal and replacement, and CIP planning. As the plans become part of the normal business operations, the subsequent versions will provide an avenue to report on actual performance parameters, such as actual vs. target service levels; actual CIP delivered versus planned delivery and improvements to deficient assets.

Vision

The City will have complete and updated Asset Management Plans for all of our categories of assets. These plans will provide a good sense of how the condition of the infrastructure will change in the future and help the City to understand potential risks and the appropriate risk mitigation strategies for each asset category. These plans will become guiding documents that feed into the data management strategies, the condition assessment strategies, the operations strategies, the maintenance plans and strategies, the renewal and replacement strategies, and the CIP planning processes.

3.3.3 Organizational Capacity

The City will work to clarify roles and responsibilities throughout the organization. The City will ensure that the right skills and competencies are available in the organization for effective asset management. The City will also work to ensure departments have the tools and resources necessary to capture, manage and communicate information. Decision-

making roles and responsibilities will be evaluated and optimized to ensure timely responses.

Vision

All employees will clearly understand their roles and responsibilities in the organization, as well as the role of their workgroups. Employees will understand the outcomes for which they and their workgroup are accountable, and how these outcomes relate to the overall City goals.

Information regarding the roles of the various workgroups in the organization will be readily available. Relationships between one workgroup and another will be clear, and each will be confident that all workgroups will do the work for which they are responsible, and that they will be held accountable for that work and the results. It will be clear who is responsible for managing assets and for making decisions about what services are to be performed and how to perform them.

In addition, the City will understand the desired competencies that the staff needs to have to be effective at asset management practices. In this regard the City will develop, implement, and manage a training program that seeks to ensure the necessary skills and competencies are always available to manage the assets.

3.3.4 Risk Management

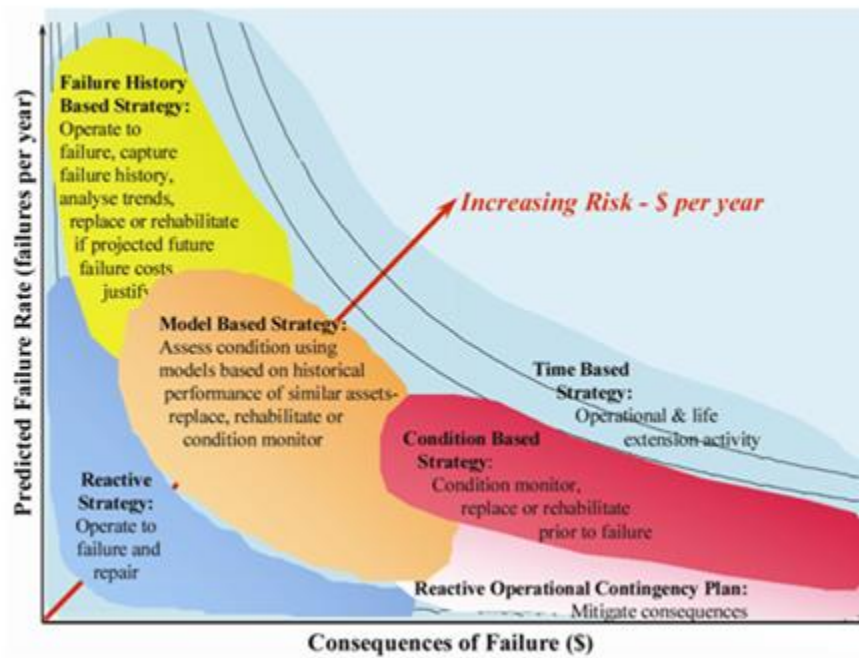
The City will intend to have a good understanding of its corporate, asset, and operational risks in order to be confident that it is appropriately investing in any risk mitigation activities needed to manage service levels. In addition, the City will need to assess and quantify risk and consider the probability and consequence of failure when making CIP, O&M, and other resource allocation decisions.

Vision

The City will implement a defined corporate risk management strategy that incorporates a thorough assessment of both consequence and probability for events and/or activities that could adversely impact the City and its ratepayers. This corporate risk management program and its principles will be understood throughout the organization. Corporate risk management scores for particular events and/or activities will be integral to every strategic decision undertaken by the City.

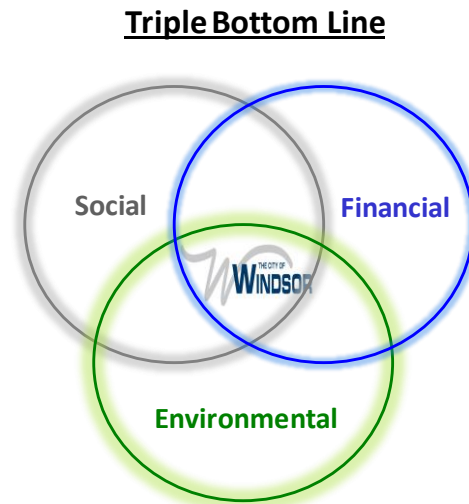
With regard to asset risk management, all assets and asset classes will be categorized by the risk exposure they present to customers and ratepayers. All assets that present an unacceptable level of risk will have specific risk costs calculated and associated with them such that appropriate risk management alternatives can be developed. For example, different risk management strategies will be applied depending on the risk signature of the asset, as shown in Figure 3-2, Risk Management Strategies vs. Asset “Risk Signatures”. So a low-risk asset may justify run-to-failure management strategy and a high-risk asset may require condition-based monitoring such as vibration and oil analysis. Risk costs will be used to develop condition-based strategies, model-based strategies, reactive-based strategies, failure history-based strategies, and contingency/mitigation plans for all asset classes.

Figure 3-3
Risk Management Strategies vs. Asset "Risk Signatures"



3.3.5 Triple Bottom Line (TBL) Approach

One of the fundamental and most important aspects of the City's Asset Life Cycle Management work will be to assess projects and initiatives based on a TBL and Life Cycle Cost (LCC) approach, wherein the City will consider financial, social, and environmental costs and benefits. These results will be considered in concert with their relationship to deliver the defined levels of service at an acceptable level of risk. The process of quantifying TBL costs and benefits in a comprehensive, accurate, and consistent manner and effectively communicating the results to decision makers, will be difficult and require much time, effort, and training. Once the City has developed and quantified these values, it will include them in the cost analyses when evaluating new projects or changes in O&M practices.



Vision

Financial, social, and environmental benefits and costs will explicitly be considered in all capital investment, operations, and program decisions. Acceptable methods of quantifying and incorporating social and environmental benefits and costs into Business Case Evaluations (BCEs) and other decision processes on a scale commensurate with financial considerations will be developed and applied. Decision making based on the triple bottom line (financial, social and environmental) will be streamlined, efficient, routine, and second nature. The triple bottom line will be universally understood to reflect the asset management goal of providing agreed service levels to customers and the community at the lowest Life Cycle Cost.

3.3.6 Business Case Evaluation based on Triple Bottom Line

In order to ensure that funds will be used wisely, the City will conduct business case evaluations for all investments exceeding a defined threshold, using the standard BCE methodology. All projects will be evaluated using standard financial indicators to ensure that the City goes forward with the most cost-effective option. The overall goal is to look at overall life-cycle costs when evaluating asset-related projects, as well as TBL costs, qualitative costs, benefits, and risks. By looking at the overall cost of ownership, the initial investment decision can be significantly different than if initial costs alone are considered.

Beyond the financial consideration involved in proving a business case, the BCE process will stress the importance of comprehensive problem definition so that all project alternatives will be focused and tangential costs will be avoided.

Vision

All projects exceeding an established cost threshold will be clearly defined, documented, and will have alternatives identified and evaluated using the standard City BCE framework. This project will be tracked after approval to validate that proposed TBL benefits will be actually realized.

3.3.7 Asset Data and Business Support Systems

Asset data and supporting data systems, such as computerized work management systems (CWMS) and geographic information systems (GIS), will be critical to an asset management program. Most organizations are working hard to obtain more, better, and more consistently available information about their assets, ranging from the most basic data such as asset age, material, size, and location, to asset history. The City will strive to have, at their fingertips, the failure history of the asset as well as the up-to-date maintenance history where appropriate. The City also will strive to know the asset condition and define the consequence if it were to fail. As The City collects this information, it will be evaluating the asset data systems utilizing data analysis tools to drive decisions making. The various systems will need to be able to “talk” to each other efficiently and share information; this involves financial systems, customer systems, work management systems, and geographic information systems. Data governance will include: single source of truth; understanding of data needs, accuracy, value, application as well as data quality control which match the functional requirements of the AM process. The City will also work on developing more-accurate and automatic ways to fully understand the cost of owning assets, or asset costing.

With a good asset costing system, the City will readily understand not only the value of the asset but also the cost to perform maintenance and operate the asset.

Vision

Asset data will be accurate and available in accordance with our defined requirements. The City will have a comprehensive inventory of the capital assets and know the value of them. An asset register will be complete and accessible, at a high level of accuracy. The City will have reliable information about the cost of owning assets. The City will, however, only invest in asset data collection, data accuracy, and data systems where it makes good business sense. City staff will leverage technology systems and integration capabilities to capture, manage, and use asset knowledge to create value through informed decision making. In addition to the City's goal will be to be both a data-rich and a knowledge-rich organization, the City will expect knowledge-rich abilities of staff to drive needs and be used.

3.4 Operational Element

The Operational elements of asset management will ensure that the various aspects of the asset management plans are implemented for each area of an asset's life-cycle. The organization's design and staff roles will be set up to ensure that there is effective coordination during the asset life-cycle. There will be efficient execution of work processes and active management of asset knowledge leveraged by technology tools and also aid in asset management objectives. All personnel involved in asset management processes will be provided with the right tools and skills/competencies to be effective in their jobs.

3.4.1 Decision Making Processes

As noted throughout this section, there will be new practices being adopted at the City that will require documentation of new procedures and decision making roles. City will work to update and clarify decision making across the organization – for example, how and when the BCE process is executed and who at the City should be making which type of decisions along the way, and how people and various workgroups will be held accountable for their work. In addition, these BCEs will provide input on recommendations for higher level decision making. The use of guidance documents will ensure process repeatability as well as output quality. This, along with the presence of clear decision making paths, will lead to a healthy and productive organization. The City will formalize the reporting structure so that the Asset Planning Division will take responsibility for the timely adoption and sustainability of these new practices.

Vision

The City's employees will understand how, where, and when various decisions are made in the organization. Staff will each receive training on new procedures and understand their own level of decision making authority. Staff will make well-informed, transparent decisions, based on objective presentation of total TBL LCC costs, benefits, and risks. Management will always support employees in their decision making roles.

3.4.2 Efficiency

In developing this framework, the City will focus on maximizing efficiency and effectiveness throughout the organization, and there will be initiatives planned to make sure that customers also are receiving the best value for their dollar. For example, staff will have documented policies and procedures for key activities, and will be provided training to ensure efficient and effective work execution. In addition to the current benchmarking project, such activities will continue at scheduled intervals providing a continuous improvement mechanism. Other efficiency initiatives will include the use of a new BCE process to improve project delivery and the use of a CWMS and performance measures to track and improve O&M activities.

Vision

Staff will be efficient in their work. Staff will understand how efficient they are as an organization in meeting customer expectations, and how their level of efficiency compares to that of similar organizations. They will have reliable information about what it costs to perform their work. Initiatives will be undertaken to assure that their work plans and methods are streamlined efficiently.

3.4.3 Life Cycle Management

The City's investment decisions (CAPEX and OPEX), whether large or small, are based on an understanding of the total life-cycle costs and benefits. This may include initial capital investment; life-cycle O&M costs; other asset ownership costs such as energy, future renewal and rehabilitation costs; and disposal costs. The City will incorporate practices by our planners, engineers, project managers, and others to assure that life-cycle costs and benefits of projects and programs are considered when making investments. For example, it is expected that personnel from finance will establish discount rates and engineers and cost estimators will track construction cost inflation.

Vision

Consideration of life-cycle costs for specific assets as well as systems as a whole will be second nature when making resource allocation decisions. Staff will ensure accuracy in their projections of life-cycle costs, and effective systems and processes for CAPEX and OPEX forecasting. They will have good understanding of the accuracy of their estimates of total capital as well as total life cycle cost of projects and programs. They will have developed and apply the rules for cost estimating consistently. The necessary data for tracking life-cycle costs of assets and activities will be provided very efficiently, and will be routinely analyzed, reported, and well understood. The life-cycle cost implications of increasing (or decreasing) service levels to customers will be accurately assessed. Staff will adopt leading practices in each phase of the asset life cycle (plan, design, create, operate, maintain, rehab/replace and dispose) to ensure that overall cost of ownership of the asset is minimized for both short and long term decision making.

3.4.4 Work and Maintenance Management

As noted under the Risk Management section, staff will employ risk-based maintenance management strategies to maintain reliability of critical assets. Staff will seek to achieve the

right balance of reactive and proactive work using the following concepts: advanced work order planning and scheduling, effective materials management, predictive maintenance, reliability-centered maintenance (RCM), and root cause failure analysis (RCFA) investigations. Automating the process through the use of a CMMS will improve efficiencies and allows timely collection of asset and work management performance information. Together, these best practices will help the City move from a reactive to proactive organization. In support of this goal, staff will be performing the right work on the right asset at the right time.

Vision

Staff will understand how best maintenance practices can improve maintenance efficiencies and adopt a reliability-focused culture at the City. Staff will utilize outside resources, as appropriate, and train the staff to establish the right balance of reactive and proactive (preventive or predictive) work to minimize maintenance costs, maximize asset reliability, and meet desired performance standards.

3.4.5 Operations Management

The City will seek to capture an optimal level of performance from the assets by practicing effective operations management. This will include treatment plant process optimization reviews, sampling management, traffic modeling, energy management, building management, and appropriate use of technology such as supervisory control and data acquisition (SCADA) and other automation systems. In addition, operations staff will team with the maintenance staff on reliability efforts such as Reliability Centered Maintenance (RCM) and Root Cause Failure Analysis (RCFA). Programs such as RCM will help identify optimal equipment operating procedures and tools such as SCADA and other automation software can help monitor performance and manage asset health. O&M teamwork will be enhanced ensuring that maintenance interventions are performed on a timely basis to keep assets functioning at the levels operators need.

Vision

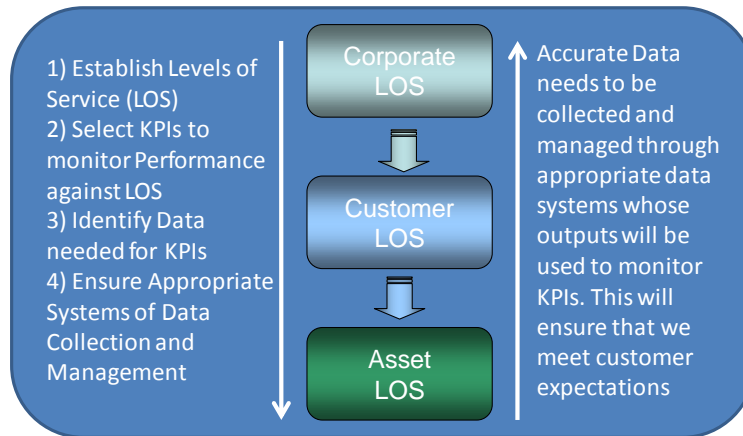
The City will get the most from the assets by practicing effective operations management and ensuring that all processes are cost-effective. The operations staff will partner with the maintenance staff and other groups to track and manage asset health, reliability, and performance.

3.5 Performance, Quality Management, and Benchmarking

To assure that the City's performance and quality will meet established targets and protocols, consistent and effective monitoring and reporting will be needed on a regular basis. Results will be used to update the AMP and other related plans as appropriate, with the documentation of actual performance providing input to adjust operational and tactical work approaches around the life cycle of assets. The AMP will include a report card which will outline performance, cost, and risk trends of various asset classes in comparison to prior AMP reporting. In addition, these report cards could suggest adjustments in the overall Asset Management philosophy and strategy, as well as provide input to overall planning and other processes. It is also important to ensure that all departments are progressing well

towards the goal of sustainable asset management as well as achieving leading practices, which will be done by reviewing our position to defined service levels and risk. The inter-relationship of these items is shown in Figure 3-3, Relationships of Data to Service Levels.

FIGURE 3-3
Relationships of Data to Service Levels



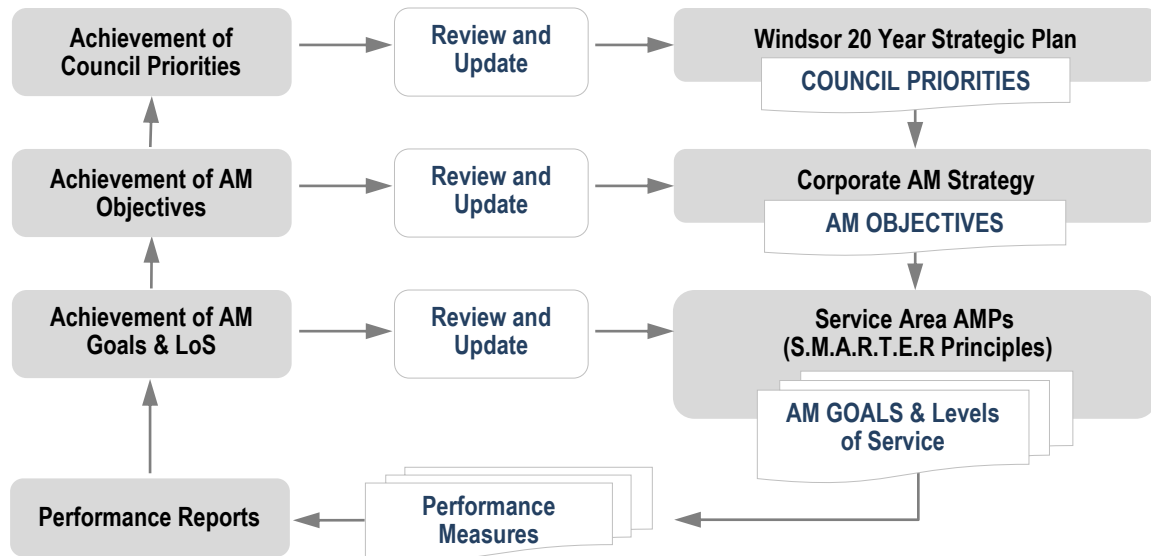
3.5.1 Performance and Quality Management

Performance and quality management will be achieved by establishing a manageable number of performance measures and indicators, which will inform work groups on how well they are meeting service levels. Performance measures shall be Specific, Measurable, Achievable, Relevant and Time-bound as well as Evaluated on a regular basis and Recognized/Rewarded when achieved or Revisited when not (S.M.A.R.T.E.R). Performance indicators will be quantifiable measures of efficiency, quality, reliability, and/or effectiveness that determine the actual level of performance. They will help describe the level at which a work group or division is performing in a particular activity or business process. Performance must be within the control of the City and generate performance-level data that can be collected and audited accurately and consistently.

As the City’s AM system matures, AM objectives will be reviewed and refined. To monitor the effectiveness of the AM objectives, levels of service and performance measures, community consultation will be undertaken through specifically designed customer surveys and workshops. In addition, the community will be able to interact with Council about the level of infrastructure service provision through various media types, including mail, e-mail and Facebook.

Internally, a workshop will be held at least once every four years with key stakeholders to review the current AM objectives and service standards.

FIGURE 3-4
Performance Management Framework



Vision

The City will have a structured system that measures and reports on the key performance indicators (KPIs). This system will contain cascading performance measures – that is, measures will flow from high-level corporate service level measures into measures for divisions and sections. Indicators will incorporate the principles of a “balanced scorecard” approach and be stated as appropriate in service agreements and individual performance agreements, and it will be clear who in the organization is accountable for each item being measured, including data collection and reporting. Further, the measures will have specific targets that will be linked to managed work processes and the annual budget. Performance monitoring information will be available in a timely manner and accessible to anyone interested. A quality control and quality assurance framework will be in place and quality will be validated through regular reviews.

3.5.2 Benchmarking

In order to measure the efficiency and quality of services to customers, the City participates in various benchmarking activities such as OMBI. The current requirements for the Ontario Infrastructure for Jobs and Prosperity will also be setting forth specific technical level of service requirements from all municipalities.

In addition to these external benchmarks asset management looks to provide monitoring on how progress is being made against defined level of service expectations. These key performance indicators help to understand if the municipality is making progress towards what they envision for their City based on defined levels of service at acceptable levels of risk and within their financial constraints. The City will use the information to create improvement strategies and report on progress.

Vision

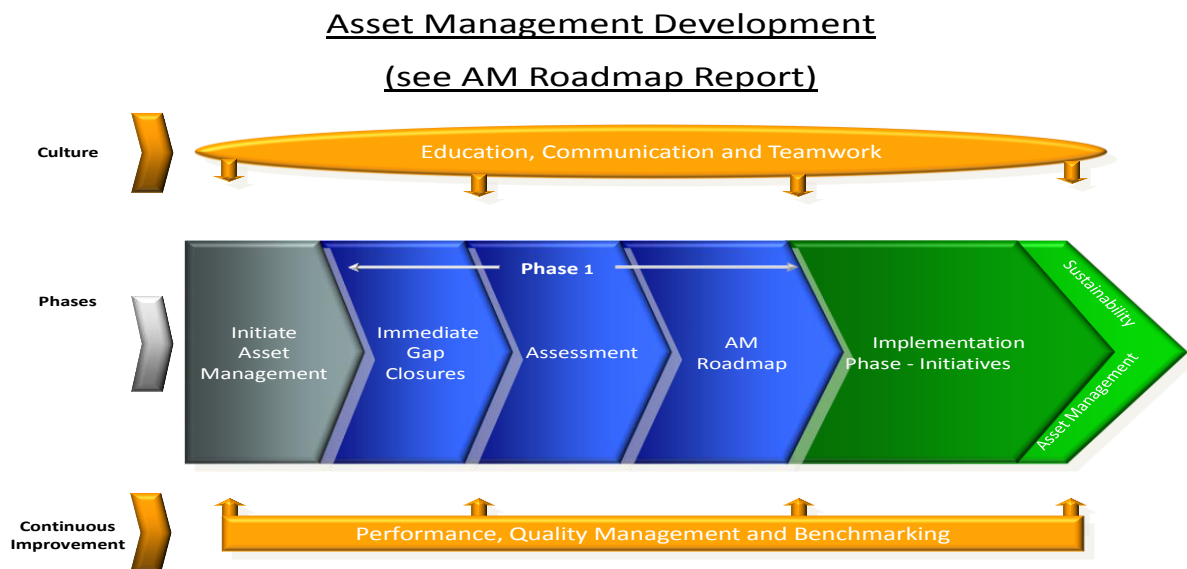
The City will have well-defined corporate benchmarking policies that establish what to benchmark, benchmarking standards, frequency of benchmarking activities, and processes for follow-up actions. The patterns of the benchmarking results will demonstrate the

progress in becoming one of the best- performing municipalities in overall municipal management, efficiency, and customer services.

4. Asset Management Development

The development and implementation of a corporate-wide asset management program at the City began in 2010 (with the initiation of the AM Governance Project) and will be developed and undertaken in phases until it has become established and sustainable across the organization. Various departments/divisions (e.g. Public Works, Facilities, Fleet) had previously started implementing components of asset management and are making progress towards their vision for excellence. An overview graphic Figure 4-1 illustrates the phases and key components for the development and implementation of the corporate asset management program, with the major items described in this section. The various aspects of Culture and Continuous Improvements were described in the previous sections.

FIGURE 4-1
Asset Management Development



4.1 Initiation:

In 2010 the City initiated formal corporate asset management development activities with the development of a project charter, selection and chartering of an AM Steering Committee to undertake the AM Governance Project. Although various departments had already started implementing asset management components, a corporate approach with general guidelines, goals, objectives and standards did not exist. A scope for a Phase 1 effort was prepared and used as the basis for selecting and contracting with an expert public utilities' and city operation AM consultant team to assist in assessing, developing and implementing asset management practices. A focus of the AM planning and capabilities building effort was to have City personnel participate and understand AM while the consultant team began the strategic phase of AM development, with the plan to increase the City's participation and responsibility over time. The overall objective being that City personnel would take on all AM responsibilities after subsequent phases.

4.2 Phase 1:

The consultant team partnered with the departments identified above to:

1. Conduct an AM readiness and maturity assessment
2. Develop an AM Philosophy & Framework to guide the implementation of AM practices
3. Develop a supporting AM Roadmap with implementation strategies
4. A kick-off to the Phase 1 effort was done through a workshop with the AM Steering Team where the approach to AM and the implementation methodology were discussed
5. Conduct an assessment of the City's existing AM practices was then performed. The CH2MHILL CAMRA assessment tool was used to compare existing City practices against leading AM practices and standards.
6. Develop a Current Situation Analysis (Gap Analysis) report based on benchmarking workshops with City staff that identified leading practices and improvement opportunities at the City
7. Develop an AM Roadmap with supporting Implementation Strategies/Improvement Initiatives. Improvement initiatives have been identified and will form the basis for subsequent AM development and implementation.
8. Development of an AM Governance model to support implementation of initiatives and sustain AM practices and concepts at the City.
9. Development of the AMP framework and guidelines

During Phase 1, City staff was provided with overviews of leading asset management practices as part of the knowledge transfer from the consultants. This has set the stage for the City to take a lead role in subsequent AM activities.

4.3 Subsequent Phases:

The improvement initiatives identified in Phase 1 are expected to be implemented over a 3- to 5-year period. City staff will be expected to take the lead in managing and implementing some of these initiatives, with support from external experts as necessary. When they are implemented, the City will have closed the major gaps identified in Phase 1 and will have set the stage for continuous improvement and sustainability of asset management practices.

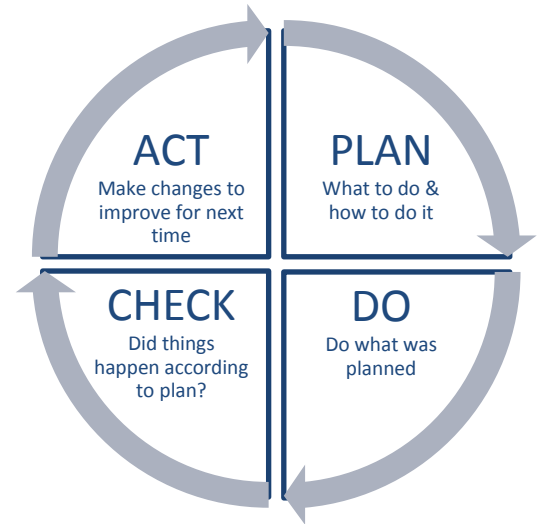
When AM is fully developed at the City, staff will have implemented key concepts and will be focused on leveraging data and enhanced asset knowledge and capabilities to sustain a high-performance organization. City staff will own and largely perform all asset management functions, with consultants playing only a secondary and occasional role.

4.4 Monitoring, Review & Continual Improvement

4.4.1 Continual Improvement

Continual improvement of the AM System is a key component of the AM Philosophy. It drives business efficiency and effectiveness and ensures that over time processes and practices are adjusted for changing circumstances. This ensures that the AM system consistently delivers required outcomes.

The continuous improvement methodology incorporates the Plan-Do-Check-Act model known as the Deming Cycle. This methodology is applied to all elements of the AM System, including documentation.



4.4.2 Management Reviews

The CFO is accountable for continual improvement of the AM system. The AM Steering Team is responsible for completing regular AM performance reviews to prove achievement of corporate and AM objectives, and ensure sustainability of continued achievement of the AM objectives. The AM Steering Team uses the results of the reviews to identify improvements necessary to maintain the suitability, adequacy, and effectiveness of the AM system.

A formal management review of the AM system, including the CAMRA assessment will be completed at least once every four (4) years, but may be completed more frequently if necessary to address issues from annual management reviews and performance reports. The management review will be documented and include consideration of the following:

- the status of actions from previous management reviews
- changes in external and internal operating environments that are relevant to AM
- AM objectives and achievement of the AM objectives
- AM system performance including trends, benchmarking results, and progress on achieving the AM Development Roadmap and improvement priorities
- opportunities for continual improvement
- changes in the profile of risks and opportunities
- competency, skills, resources and support
- service delivery performance

The outputs from the reviews will include decisions and actions relating to improvements in the AM system, including: variations to the scope, policy and objectives; criteria for AM decision making; updates to performance requirements; resources including financial,

human and physical resources; changes to controls and how their effectiveness is measured including roles, responsibilities and authorities.

The necessary changes and/or corrective actions identified from the management reviews are documented in an update to the AM Roadmap, and relevant information is communicated to relevant employees and stakeholders.

4.4.3 Internal Audits

The City does not have a regular internal audit program for management systems but from time to time, as deemed appropriate by the CAO, the City may engage external auditors to evaluate compliance with business processes.

4.4.4 Monitoring & Review of the AM Philosophy & Framework

The AM Steering Team is accountable for continual improvement of the AM Philosophy & Framework and the AM Objectives.

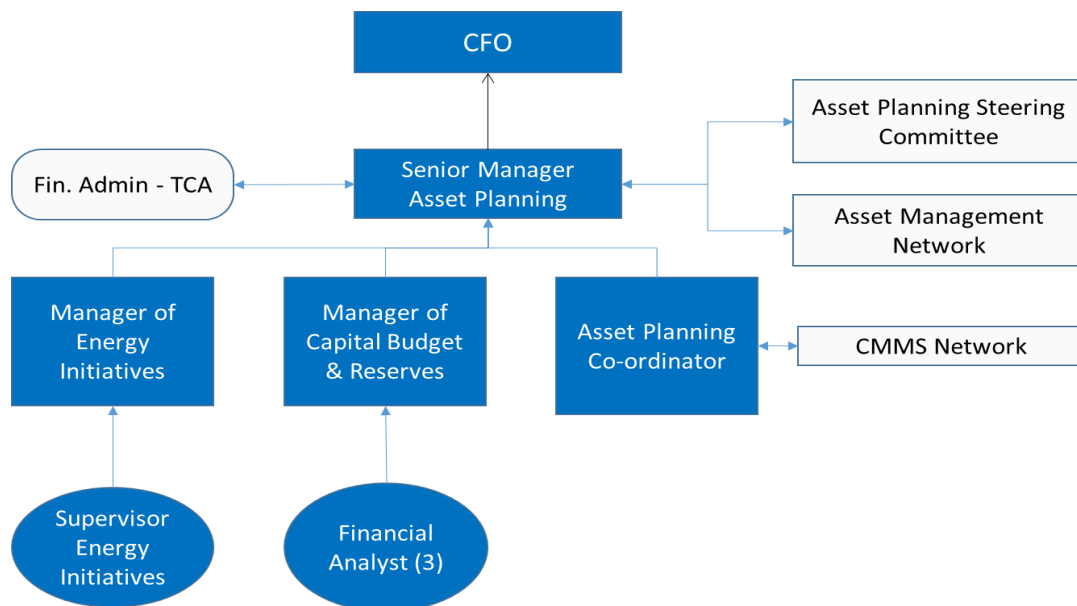
5. Asset Management Governance Model

AM Governance ensures that the City plans and implements an organization design to support AM practices at both a corporate and departmental levels. An asset management governance model is a key foundational element in any asset management program. It provides guidance in two key areas: (1) Program Delivery and (2) Program Sustainability. The key objectives for an AM Governance Model can best be described as follows:

1. Provide an organization design to ensure successful implementation of all phases of the City’s asset management governance program
2. Provide an organization design that operationalizes asset management throughout the City’s departments/divisions.
3. Ensures consistency in asset management concepts and practices at a corporate level but also provides departmental flexibility for implementation and management at the tactical and operations levels
4. Allows for strategic planning and understanding of future challenges and business drivers that may require changes to existing asset management concepts and practices to ensure effectiveness and sustainability

The City will implement the following Governance model to achieve the above objectives. Figure 5.1 shows the structure of the Asset Planning Division and functional relationships with other stakeholders in the AM governance structure:

Figure 5-1
AM Governance Model



The model consists of a centralized Corporate Asset Planning Division, and a formal decentralised Departmental Delivery Model (Asset Management Network). These are accountable to a cross-functional facilitation and approval group, the Asset Planning Steering Committee¹.

The Asset Planning division created in 2013 reports to the Chief Financial Officer/City Treasurer and Corporate Leader Finance and Technology and the division is responsible for Corporate Asset Management, Capital Budget and Corporate Energy.

To ensure asset management strategies meet Provincial guidelines and are corporately developed and approved, the Senior Manager of Asset Planning reports to an Asset Planning Steering Committee for any Asset Management related activities, and facilitates discussions regarding details and direction on asset management deliverables are handled through the Asset Manager Network. The Asset Co-ordinator in the division facilitates discussions and works with the Computerized Maintenance Management System (CMMS) Network to implement various practices and to create and enhance data collection and management. These three groups all have representatives from the various operational and finance areas to ensure corporate development and support of any changes in asset management practices at the City.

5.1.1 Asset Planning Steering Committee

The Asset Planning Steering Committee consists of Executive Directors (department heads) and senior managers. The Committee will:

1. Provide oversight and guidance during planning and implementation of the overall roadmap.
2. Define the SMAP's roles and responsibilities as it relates to AM, and delegate responsibility to the SMAP to act as a champion for AM within the organization.
3. Oversee development, implementation, and updating of the AM Policy, AM Philosophy and Framework and AM Roadmap or subsequent documents that set direction or require Council approval. The Committee may delegate responsibility for generation of these documents to the SMAP.
4. Review and endorse AM documents to the CAO, Mayor and Council with comments and recommendations.
5. Support and facilitate the implementation and continuous improvement of AM practices, processes, and tools throughout the organization to support the achievement of the City of Windsor's organizational objectives.
6. Review, debate and endorse AM Plans, programs and budgets in collaboration with the Senior Manager Asset Planning.

¹ The full details of the model and the various options evaluated are provided in the AM Governance Model Report. The AM Operational Report will provide details of the organizational impacts related to AM governance at the departmental level. Appendix 301 provides an overview of the team based approach to asset management development.

7. Monitor significant and critical AM risks and the implementation of mitigation measures.

5.1.2 Senior Manager Asset Planning (SMAP)

The SMAP reports to the Asset Planning Steering Committee with regards to the development and implementation of the AM Roadmap and the Development of Asset Management Plans. The SMAP will:

1. Manage the Corporate Asset Planning Division and provide City-wide leadership in AM practices and concepts. The Asset Planning Division will be a division within the Finance and Technology Department with the Senior Manager Asset Planning reporting to the Chief Finance Officer
2. Define, document, and implement the Terms of Reference for the AM Steering Committee subject to approval by the CAO.
3. Formally track and report to the Asset Planning Steering Committee on the benefits of the AM Program and progress with implementation of the AM Policy and improving AM practices. Includes coordinating internal and external benchmarking of AM practices, and development of an Infrastructure Report Card for reporting to Council at least every four years.
4. Work collaboratively with the AM Network Team to develop and implement the AM Roadmap, and direct the Asset Planning Coordinator in the implementation of AM initiatives where integration across business units or service areas is desired or where a standardized approach is required.
5. Manage the development and implementation of corporate-level AM initiatives to support evidence-based decision-making at Council level, senior management, tactical and operational levels within the organization.
6. Work collaboratively with the AM Network Team and others across the organization to develop the corporate and service area specific AM Plans.
7. Manage organizational capacity and competency in asset management, facilitate change management within departments. Includes coordinating (and delivering as necessary) skills training and development for employees in specific AM disciplines.
8. Facilitate asset management workshops to develop corporate asset management practices, processes and tools – e.g. Level of Service and Risk Management frameworks, Business Case Evaluations, etc.

5.1.3 Asset Management Network

The AM Network Team will consist of managers nominated by each department to represent their department on the AM Network Team. These AM Network Team designates will:

1. Report to the department heads of the various operating departments and facilitate implementation of AM within their departments. Department heads will be

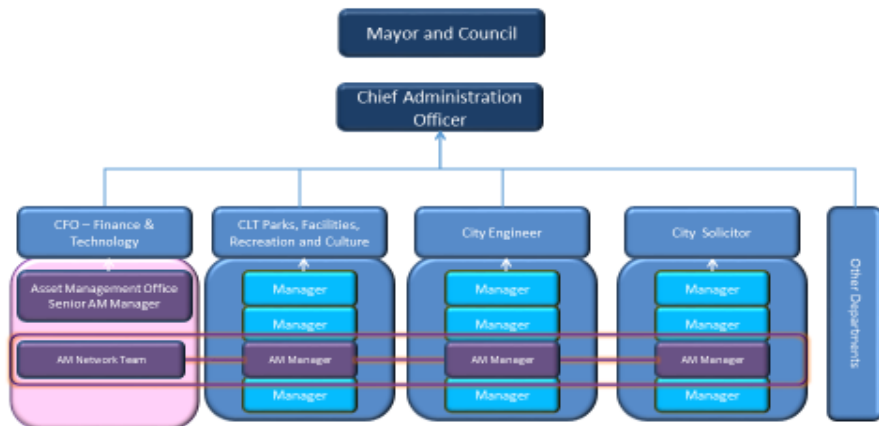
responsible for ensuring that the new ways of doing business are adopted and becomes part of the City's operating culture as implementation progresses.

2. Work collaboratively with the SMAP to maintain the AM Roadmap, develop AM processes and tools, and prepare AM Plans.
3. Track and report on AM benefits at the departmental level
4. Ensure data integrity and accuracy for the assets managed by the department
5. Participate in regular AM coordination and planning meetings of the AM Network

5.1.4 Organizational Structure

The AM Governance model operates within the organizational structure of the City. Note that the AM Network Team box in the Asset Planning Division is not a position. It is there to show how the AM Manager in each department will relate to the Asset Planning Division to ensure Asset Management practices are uniform throughout the City.

Figure 5-2
City of Windsor Organization Chart



Executive Directors of City Departments are responsible for:

1. The on-going support of established asset management practices.
2. The reporting of AM practices and results through AM Plans.
3. Development of budgets (Capital and Operating) to support the goal of lowest overall cost of asset ownership.
4. Ensuring implementation of the AM Plans for major asset classes in the department
5. Provide strategic support and direction for asset management practices at the department.

Reference Documents

- 5.1.1 Asset Management Current Situation Report
- 5.1.2 Asset Management Policy

- 5.1.3** Asset Management Governance Model
- 5.1.4** Asset Management Roadmap
- 5.1.5** Asset Management Operational Plan Report
- 5.1.6** Asset Management Asset Management Plan Guideline
- 5.1.7** Asset Management Glossary of Terms
- 5.1.8** Official Plan
- 5.1.9** 20 Year Strategic Vision
- 5.1.10** Neighborhood plans
- 5.1.11** City of Windsor Tangible Capital Asset Policy
- 5.1.12** ISO 55000 series Standards for Asset Management
- 5.1.13** International Infrastructure Management Manual

6. SCHEDULE A

Key Asset Management Terms and Definitions

Advanced Asset Management - Asset management which employs predictive modeling, risk management and optimized decision-making techniques to establish asset lifecycle treatment options and related long-term cash flow predictions. (See also Basic Asset Management).

Asset - a physical part of a facility that has value, enables services to be provided, and has an economic life of greater than 12 months. Dynamic assets have some moving parts, while passive assets have none.

Asset Management (AM): Co-ordinated activity of an organization to realize value from its assets. AM involves the balancing of costs, opportunities and risks against the desired performance of assets, to achieve organizational objectives (balancing may need to be considered over multiple timeframes). AM enables an organization to examine the need for, and performance of, assets and asset systems at different levels and in conjunction with non-asset solutions. Additionally, it enables the application of analytical approaches towards managing assets over the different stages of their lifecycle.

Asset Management Objectives (AM Objectives): Specific outcome or achievement required of the AM System in order to achieve the AM Strategy.

Asset Management Policy (AM Policy): The AM Policy describes the organization's intentions and directions for AM, as formally expressed by its senior management. It describes the principles and framework adopted in applying AM to achieve the organization's strategic objectives.

Asset Management System (AM System): The complete set of interrelated or interacting elements used to effect the AM Policy and objectives and the processes to achieve those objectives. These elements that make up the AM System can include documents, procedures, tools, data, and the assets.

Asset Management Strategy (AM Strategy): Documented information that specifies: how organizational objectives are converted into AM Objectives; the scope and role of the asset management system in supporting achievement of the AM Objectives; and the approach for developing AM Plans. (Framework)

Asset Management Plan (AMP): A plan developed for the management of infrastructure assets that combines multi-disciplinary management strategies (including technical and financial) over the lifecycle of the asset in the most cost-effective manner to deliver a specified level of service. It specifies the activities, resources and timescales required for individual assets (or asset groups) to achieve the organization's AM Objectives. A significant component of the AMP is therefore a long-term program of works and cash flow projection for the activities. Examples of AMPs include Pavement Management Plans, Bridge Management Plans, and Fleet Management Plans. Each plan will vary in complexity depending on the asset group it pertains to.

Asset Register - A record of the asset inventory, including the historical, financial, condition, construction, technical, and financial information about each asset

Community assets – Assets managed or stewarded by the city on behalf of the community to deliver, or support delivery of, essential services. Includes traditional assets (roads and utilities), cultural assets (museums, monuments), and natural resources that are used in or impacted by the delivery of services (trees, parks, land, water). .

Business Case Evaluation (BCE) - A formal process undertaken to evaluate the best alternative for a project or initiative. The evaluation involves documenting the activity's Benefits/Cost ratio using life-cycle analysis.

Capital Expenditure (CAPEX) - Expenditure used to create new assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of the asset stock.

Consequence of Failure - The potential impact to the corporation if the risk occurred. (per CoW risk policy)

Corrective Maintenance - The remedial actions performed as a result of failure, to restore an item to a specified condition. Corrective maintenance may or may not be planned.

Critical Assets - Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation.

Deferred Maintenance - The shortfall in rehabilitation work required to maintain service potential.

Deterioration Rate - The rate at which an asset approaches failure.

Economic Life - The period from the acquisition of the asset to the time when the asset, while physically able to provide a service, ceases to be the lowest-cost alternative to satisfy a particular level of service.

Expected Useful Life - The period over which an asset is designed to deliver the agreed upon level of service (LOS)

Failure - The condition in which an asset fails to perform its function. Failures can be total (e.g., a pump fails to pump any water) or partial.

Key Performance Indicator (KPI) - A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target.

Level of Service (LOS)- the parameters or combination of parameters that reflect the social, political, economic, and environmental outcomes that the organization delivers. Levels of service statements describe the outputs or objectives an organization or activity intends to deliver to customers

Lifecycle Costs: Lifecycle costs refer to the total cost of ownership over the life of an asset. This may include but is not limited to capital costs, operating costs, maintenance costs, renewal costs, replacement costs, environmental costs, and user delay.

Lifecycle Cost Analysis (LCCA) - Any technique that allows for the assessment of alternative solutions (including continuation of the status quo), based on all relevant economic consequences and benefits over the service life of the asset.

Probability of Failure - The likelihood that a risk will occur (ref: CoW risk policy).

Rehabilitation - Work to rebuild or replace parts or components of an asset, to restore it to a required functional condition and extend its life, which may incorporate some modification.

Renewal - Work to upgrade, refurbish, or replace existing assets or facilities with assets or facilities of equivalent capacity or performance capability.

Risk Management - The application of a formal process to assess organizational risks in order to determine the resultant ranges of outcomes, their probability of occurrence, and what actions may be taken to reduce the organization's overall risk exposure.

Triple Bottom Line: Expands on the traditional view of an organization's financial bottom line by also measuring the organization's commitment to economic, socio-cultural and environmental factors.