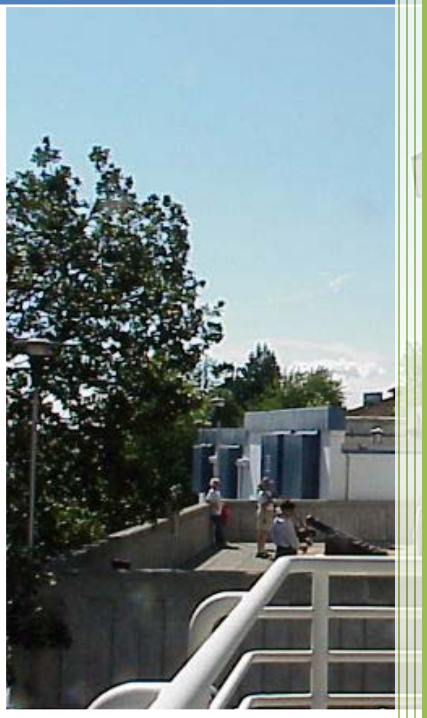
Attachment B

2017

Strategic Asset Manage



City of Nanaimo

Executive Summary

Delivering services and achieving organizational objectives sustainably, effectively, and efficiently, requires a robust asset management system. "Asset management translates the organization's objectives into asset-related decisions, plans and activities, using a risk based approach" (International Standard ISO 55000, 2014).

Asset management will help the City determine its service level, asset investment options and priorities and provide information to:

- Make well-informed, evidence-based decisions;
- Validate priorities in a rationale and defensible manner;
- Understand the consequences of decisions; and
- Minimize the total cost of service over the lifecycle of assets.

Endorsed by the Chief Administration Officer (CAO), the Strategic Asset Management Plan (SAMP) is a governance document in the City's AM System (AM System) that:

a) **Documents** how organizational objectives have been converted into an AM System;
b) **Informs** the approach for developing Asset Management Plans (AM Plans); and
c) **Describes** the AM System and its role in supporting achievement of AM objectives

The City's AM system and AM objectives do not replace existing corporate strategies, business planning and budget management systems and processes. The AM system and objectives are intended to align with these initiatives and support achievement of organizational objectives.

How the City's assets are managed and operated plays a key role in achieving the City's strategic goals and objectives. Many of these goals and objectives are reliant on the long-term sustainability of the City's infrastructure; therefore, one of the objectives of the AM Strategy is to provide a clear "line of sight" between those high-level objectives and the day-to-day activities carried out on the City's assets.

The following diagram sets out the performance management framework for Asset Management. As Asset Management plans are completed for Nanaimo services, the process for measurement, reporting, review, and update of AM objectives and goals will be implemented. These reviews will be completed with reference to Council priorities (and organizational objectives). This will ensure integration is maintained and all are supporting and complementing each other, and working towards the same outcomes.

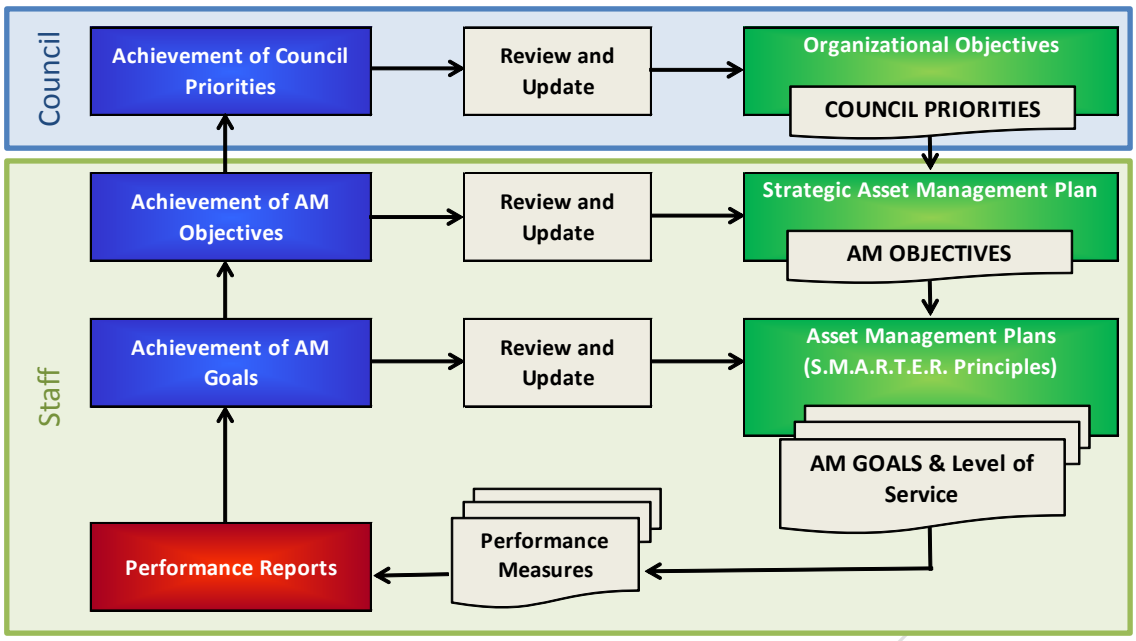


Figure 1: Performance Management Framework for AM System

This is a first generation SAMP. It necessarily refers in part to an aspirational future state for AM, and the practices and processes that are or need to be in place, to achieve it. This will change in future iterations of the SAMP, as the City progresses in AM and practices and processes are developed and implemented through the AM continuous improvement process. The following diagram shows the key Asset Management documents that will assist the City to achieve strategic priorities and deliver sustainable, resilient, services now and into the future.

Figure 2: Document Hierarchy for AM System

The SAMP builds on the organizational principles and commitment to asset management that are described in the City's Asset Management Policy, and outlines the governance framework and objectives for the City's AM System.

Core improvement areas have been identified for the City's AM system. The Asset Management Steering Committee will identify AM objectives within these core areas and coordinate initiatives to support improvements. The core improvement areas are:

- Governance
- Service Delivery
- Decision-making
- Performance
- Asset Management Information and Technology
- Business Processes
- Risk Management
- Sustainability and resilience

This SAMP has identified a number of initial AM objectives to improve the organization's AM system. Periodic reporting on the progress toward these objectives is a responsibility of the AM Steering Committee. Subsequent SAMP updates will review progress/completion for each AM objective and identify new AM objectives or amendments as appropriate to outcomes.

To support improvement, the City will adopt a "Plan-Do-Check-Act" continuous improvement model, and consider long-, medium- and short-term needs for delivery of sustainable services. An initial list of key AM Improvement initiatives has been identified for this first SAMP. These will be reviewed and added to by the AM Steering Committee and progress monitored and reported on. The initial AM Improvement Intiatives are;

AM Core Improvement Area	Initiative and Expected Outcome	Working Group Lead
Governance *AM Policy completed. Document to go to Council for adoption in 2018.*	Complete an AM Policy document to implement AM practices and process for sustainable infrastructure management and delivery of the City's services	AM Steering Committee and working group.

AM Core Improvement Area	Initiative and Expected Outcome	Working Group Lead
Service Delivery *Current project planned under LAMP Phase 2 funding for completion in 2018.*	Define levels of service for Parks (pilot) services and related financial analysis. Includes public engagement. To be used as a template for all City services	AM Steering Committee and working group.
Decision-making	With consideration to criteria for Risk Assessment, identify key criteria for decision-making and document the data requirements and analysis necessary to rate each criteria so it can be used in decision processes	AM Steering Committee and working group
Performance Measures	Develop a Performance Measurement and Monitoring Framework for the systematic monitoring, analysis, and evaluation of the organization's assets, service delivery, service costs, AM progress and AM effectiveness	AM Steering Committee and working group
Asset Management Information and Technology, Decision-making *Ongoing.*	Investigate options to improve data collection, management and analysis for infrastructure maintenance and investment planning, and for decision making.	AM Steering Committee, working group and Departmental managers
Business Processes	Develop a collated record of existing Standard Operating Procedures (SOP) relating to Infrastructure Assets and Delivery of Services and review for gaps. Implement a project to close critical gaps in standard procedures.	AM Steering Committee and working group

AM Core Improvement Area	Initiative and Expected Outcome	Working Group Lead
Risk Management *Initial project completed in 2017. Follow on work required to implement.*	Develop a risk framework template to prioritize infrastructure investment and identify consequences. Implement for priority assets.	AM Steering Committee and working group
Sustainability and Resilience *AM Steering committee to review.*	Collaborate with sustainability initiatives to integrate sustainability and resilience principles into decision-making processes for infrastructure assets and delivery of services by the City.	AM Steering Committee and working group

Contents

Acronyms and Abbreviations

Acronyms

AM	Asset Management
AMS	Asset Management System
CAO	Chief Administrative Officer
ISO	International Standards Organization
OCP	Official Community Plan
SAMP	Strategic Asset Management Plan

Abbreviations

AM Objectives	Asset Management Objectives
AM Policy	Asset Management Policy
AM Plans	Asset Management Plans
AM Steering Committee	Asset Management Steering Committee
AM System	Asset Management System
The City	City of Nanaimo

Definitions

Definitions for asset management terms used in the SAMP are given in Appendix A

1 Background

1.1 Why Asset Management?

Delivering services and achieving organizational objectives sustainably, effectively, and efficiently, requires a robust asset management system. "Asset management translates the organization's objectives into asset-related decisions, plans and activities, using a risk based approach" (International Standard ISO 55000, 2014).

Asset management will help the City determine its service level, asset investment options and priorities and provide information to:

- Make well-informed, evidence-based decisions;
- Validate priorities in a rationale and defensible manner;
- Understand the consequences of decisions; and
- Minimize the total cost of service over the lifecycle of assets.

Asset management is a business model and management system made up of best practices for the sustainable creation, acquisition, maintenance, operation, rehabilitation and disposal of assets.

Increased global awareness and promotion of AM is evident in the Government of Canada's inclusion of asset management in the New Building Canada Plan and Gas Tax agreements. Furthermore, a growing number of provincial governments require or recommend demonstration of asset management capacity to determine local government's eligibility for grant funding.

The City of Nanaimo's investment in infrastructure supports delivery of needed and desired services to the community. The City faces operational, environmental, social and financial challenges in delivering these services due to: ageing infrastructure, growth, changing regulatory standards and the community's demand for new services. Making asset investment decisions that consider how the environment, society, and economy could change, and how asset investment decisions could accelerate or mitigate that change, is a critical part of moving to a sustainable community. A robust asset management system provides decision makers with needed information and analysis for infrastructure investment.

1.2 Developing the City's Asset Management System

The required changes in financial reporting for municipalities in 2008 brought needed attention to aging infrastructure, and challenges facing local governments in funding operations, renewal and growth of their infrastructure.

Since 2008, the City has made significant progress in developing its Asset Management System (AM System) including: communication with Council and the community; providing staff education and training;, development of long term infrastructure renewal plans; and improvements to asset inventory information.

Council identified asset management as a priority in strategic plans and approved new funding strategies for asset management reserves. The City's asset management system will support achievement of the guiding principles and goals, stated in the City's Official Community Plan, for 'striving toward a more sustainable Nanaimo'.

In alignment with ISO 55000, the City's asset management system:

- Is informed by all its major stakeholders, and applicable regulatory and financial constraints.
- Is a key responsibility of leadership at all levels in the organization.
- Is a collaborative and integrated activity across the organization and includes engineering, development, environmental, social and financial disciplines.
- Includes performance monitoring and evaluation to ensure processes are achieving organizational objectives.
- Includes continuous improvement processes and prioritized initiatives that provide value, improve efficiency and effectiveness, and support achievement of organizational objectives.

1.3 Why is a Strategic Asset Management Plan (SAMP) Needed?

While much work has been accomplished through collaboration and cooperation across the organization, it is recognized that asset management needs to be properly described and documented. It is a formal business model and has impacts across the organization, and for both current and future planning. The SAMP will support clear communication and systematic improvement of asset management in alignment with the organization's long term commitment to improving its AM System.

2 Asset Management Documents

2.1 Asset Management Policy

The City's Asset Management Policy establishes the governance roles for Council and for the Chief Administrative Officer (CAO). The policy also outlines the over-arching principles for the City's asset management system. One of the key responsibilities of the CAO is to develop and implement a Strategic Asset Management Plan.

2.2 Strategic Asset Management Plan (SAMP)

The SAMP is a core component of the AM system and describes the framework for implementing the City's AM Policy. This SAMP:

- Defines the scope of the City's AM system;
- Demonstrates the linkages between AM and achievement of the City's strategic objectives;
- Recognizes customer needs and expectation and how they relate to asset management;
- Describes the environment within which the City operates and the strategies in the AM system to manage the risks and opportunities this environment presents
- Defines the functional components of the AM system (practices, processes, tools, and documents) and describes the relationship between the major elements
- Describes the overarching approach to decision making and the principle criteria that departments will use when providing recommendations and making decisions
- Defines key organizational roles and responsibilities for the management and improvement of the City's AM system;
- Articulates the City's asset management objectives and how they support organizational objectives;
- Documents the process for continuous improvement and identifies current improvement priorities.

Future updates to the City's SAMP will recognize progress made and identify future asset management objectives.

2.3 Asset Management Plans (AMPs)

Asset Management Plans are departmental business documents. They set out all the information necessary to manage service delivery, including information about: the assets; lifecycle strategies for operations, maintenance, renewal, and new assets; level of service; demand management; risk management; cost forecasts; performance targets and measures; and continuous improvement initatives.

2.4 AM Document Hierarchy

The following diagram shows the hierarchial relationships between the City's strategic priorities and key Asset Management documents that will assist the City to achieve those priorities and deliver sustainable, resilient, services now and into the future.

Figure 3: Document Hierarchy for AM System

3 Purpose and Scope

3.1 Purpose of SAMP Document

The SAMP is a core component of the City's AM system and describes how the AM policy will be implemented. The SAMP documents the City's asset management objectives and describes the role of the AM system in supporting those objectives by:

- Defining the role of asset management in achieving organizational objectives within the scope of the AM policy;
- Identifying asset management decision-making approach and tools;
- Defining organizational roles and responsibilities for the management and improvement of the City's AM system; and
- Identifying the City's AM objectives.

The functional relationship between the SAMP and other documents and activities in the City's AM system is shown below.

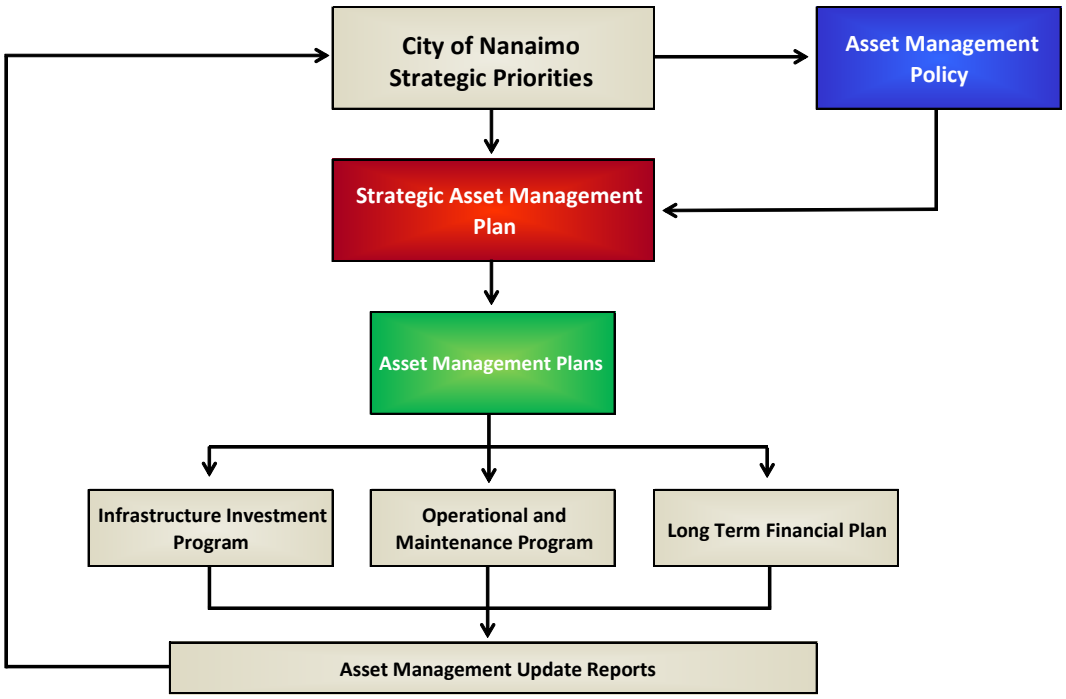


Figure 4: Functional Relationship of SAMP

3.2 Intended Outcome of the Strategic Asset Management Plan

The SAMP is intended to provide guidance and a framework to assist the City in achieving the following goals:

- Informed decision making;
- Integrated planning;
- Organizational responsibility and accountability;
- Sustainable service delivery;
- Efficient use of resources;
- Defined service levels and outcomes;
- Quality stakeholder engagement;
- Managed risk;
- Appropriate AM practices;
- Transparent monitoring and reporting; and
- Continuous improvement.

3.3 Scope

The City owns a wide range of assets that are used by business areas/units or by external users, under co-management agreements, to deliver services to the community. Each year the City may receive or construct new assets. The SAMP applies to all assets owned by the City. Where appropriate, the City will work towards creating or improving existing asset management plans with service-delivery partners and, where possible, will incorporate AM principles and practices into future contracts and agreements.

Other assets, either owned by the City or others, may fall within the scope of the City's AM system in the future as a greater understanding of their links to services is developed. For example:

- Natural assets (ecosystems, drainage channels, rivers, aquifers etc)
- Land

Appendix B provides an overview of City's services and the infrastructure that supports delivery of those services.

4 Asset Management Process and Practices

4.1 Asset Management Processes and Practices Diagram

The City's asset management activities will follow best practices and are consistent with the framework developed by Asset Management BC. This framework provides an overview of a systematic approach to sustainable delivery of services.

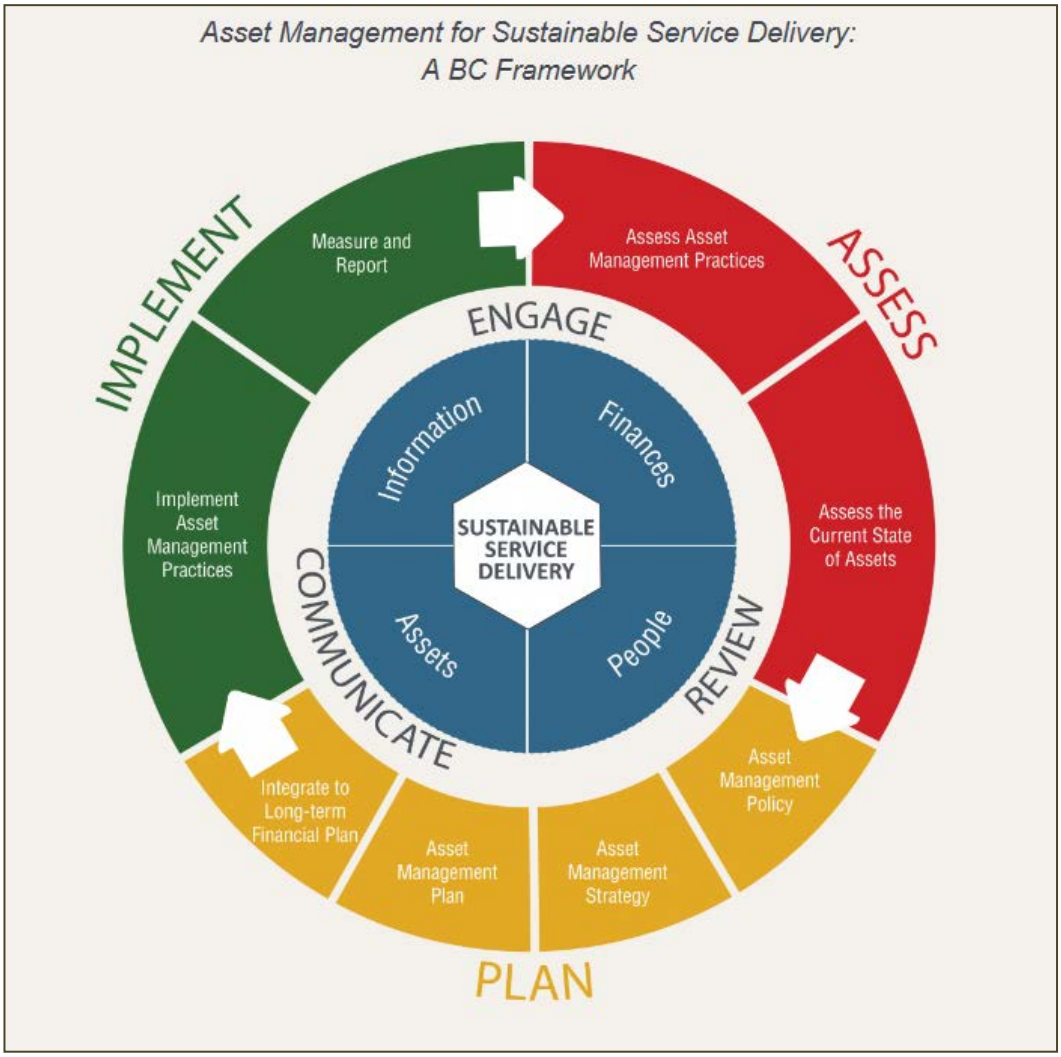


Figure 5: AM Framework for Sustainable Service Delivery

The City's AM system is organized around the three core processes (Assess, Plan, Implement), and four enablers (Information, Finances, People, and Assets). The following table outlines current practices and AM objectives for the three AM core processes (Assess, Plan, Implement).

Table 1: AM Core processes and Objectives

AM Core Processes	Current Practice or AM Objective	References / Responsibility
Assess		
Assess AM Practices	Assess AM system, prioritize improvement initiatives	AM Steering Committee
Current State of Assets	Document current inventory, asset condition/performance, current replacement cost and replacement	AMPs by infrastructure type
Plan		
AM Policy	Approved AM Policy	AM Steering Committee
AM Strategy	Approved SAMP	AM Steering Committee
AM Plan	20 Year Investment Plan and Asset Management Update (2017)	AM Steering Committee
Long Term Financial Plan	20 Year Investment Plan and Asset Management Update (2017)	AM Steering Committee
Implement		
AM Practices	Implement AM system improvements	SAMP (Improvement Initiatives), AM Steering Committee
Measure and Report	Monitor progress in AM	Annual AM Update and Financial Reports, Balanced Scorecard, AM Steering Committee

5 Strategic Alignment

The City's planning processes to deliver services and achieve strategic goals and objectives are guided by legislation, policies and principles. The SAMP is the basis for; delivery of the AM Policy, efficient compliance with the organization's business needs and achievement of strategic objectives and goals.

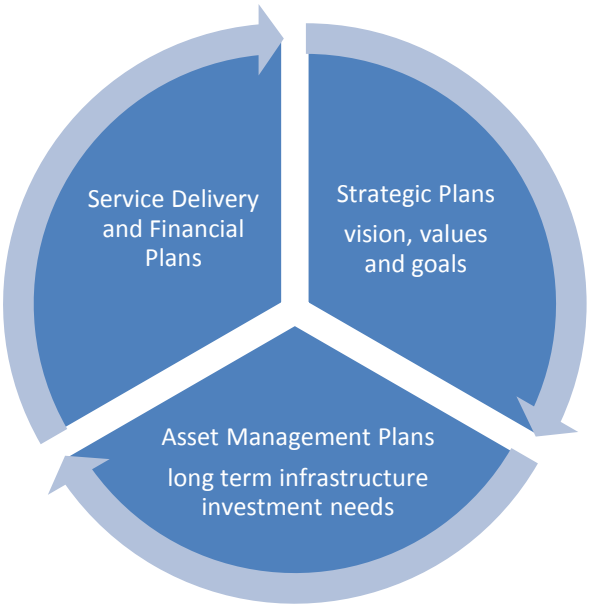


Figure 6: AM Decision Flow Diagram

The integration of the AM policy and SAMP to the City's decision making and delivery of services is reinforced through links and references in other corporate documents. Where possible, Council and staff will consider the AM policy and the SAMP when updating or developing corporate documents, including but not limited to:

- The Official Community Plan, 'planNanaimo'
- Corporate strategic plans
- Long-term financial plans
- Annual reports
- Operational plans
- Design standards and specifications

In particular, Council and staff will;

- Review AM principle statements contained in the AM Policy and incorporate these (or recommend amendments if applicable) when updating or developing corporate documents
- Consider their AM roles and responsibilities as they relate to each corporate document and provide for alignment, integration, and support
- Ensure coordination of processes for updating or developing corporate documents with relevant processes in the AM system, especially the performance management framework outlines in Figure 7

5.1 How Asset Management Supports Organizational Objectives

The City's AM system and AM objectives do not replace existing corporate strategies, business planning and budget management systems and processes. The AM system and objectives are intended to align with these initiatives and support achievement of organizational objectives.

How the City's assets are managed and operated plays a key role in achieving the City's strategic goals and objectives. Many of these goals and objectives are reliant on the long-term sustainability of the City's infrastructure; therefore, one of the objectives of the AM Strategy is to provide a clear "line of sight" between those high-level objectives and the day-to-day activities carried out on the City's assets.

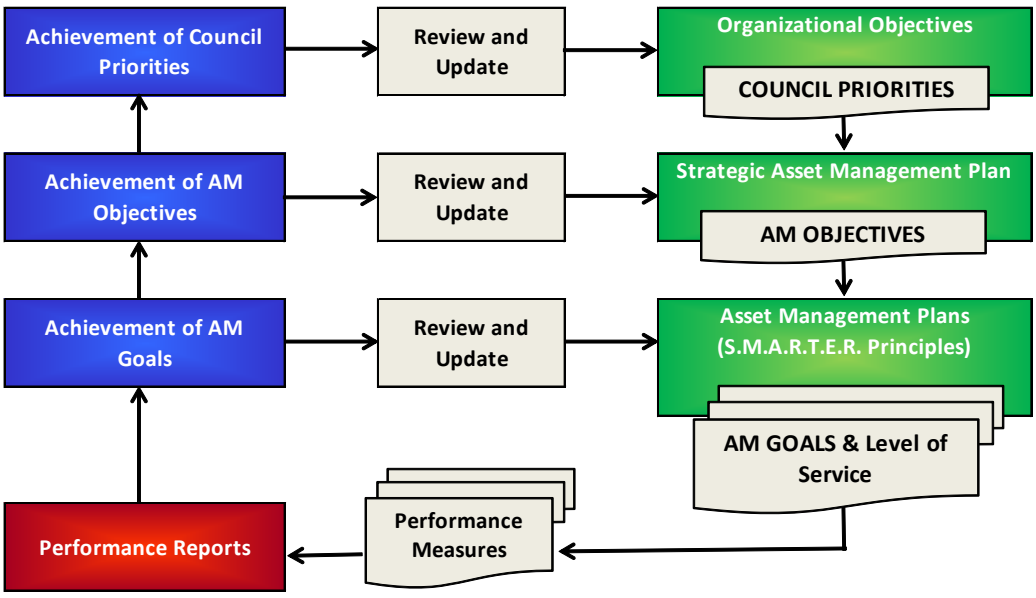


Figure 7: Performance Management Framework

6 Customer Needs and Expectations

Customers, both internal and external, will be affected by, and therefore have an interest in management of the City's infrastructure. Their needs (and the risks that will arise if their needs are not net) must be understood and addressed in order for the SAMP to be successfully implemented.

The following customer management activities will be incorporated into the SAMP and into Business AMPs as indicated:

- SAMP: Customer management activities
    - Develop consistent program messaging to be used across differing groups to inspire trust and reduce suspicion stemming from conflicting information.
    - Identify and monitor emerging issues and political forces that influence customers.
    - Identify customer engagement tools and processes.

- Business AMPs: Customer management activities
    - Identify customers who are relevant to the assets and services applicable to each AMP.
    - Identify anticipated customer AM requirements and expectations, by group, and their roles/attitudes to service delivery and service costs.
    - Identify customer requirements for recording financial and non-financial information relevant for AM.

The City's Asset Management Steering Committee will engage with internal customers by: communication, training, providing guidance and direction for AM development, providing appropriate support for AM initiatives, and monitoring and reporting on corporate-wide progress in implementing the AM policy and strategy.

The City will need to consider a formalized process for engaging external customers. This will be an improvement initiative for the City's AM system.

For all internal and external customers, the City is committed to clear, consistent, and timely communications and to incorporating their priorities in the development and implementation of the SAMP.

7 Asset Management Decision Making

7.1 Principles for Decision Making

The decision-making approach will incorporate the following principles:

- Service Delivery to Customers: Involvement of customers, including the community and staff, in defining and developing strategies, policies, levels of services, and in the decision making concerning the City's infrastructure.
- Long-Term Sustainability and Resilience: Investment decisions that consider long-term socio-cultural, economic and environmental impacts.
- Holistic Approach: Collaborative approach to supporting the delivery of services.
- Financial Reality and Investment Decision Making: Achievement and maintenance of affordable investment levels for all City assets.
- Innovation and Continual Improvement: Adoption of good or, where proven cost-effective, best practices in AM.

7.2 Decision Criteria

Decision criteria will consider customer expectations, level of service requirements, legislation, costs, risks, and long-term sustainability and resilience issues (such as climate change and other environmental, social-cultural, and financial impacts).

7.3 Decision-making Methodologies

Decision-making methodologies will include risk and service level assessments to ensure outcomes for customers are considered. Analysis and reporting to support decision-making will be robust, unbiased, and clearly understood by all users.

Decision approaches may vary for different circumstances but will be consistent across the organization. Business cases including qualitative and quantitative analysis (eg. Triple Bottom Line) can be used where new services or where a significant change in service delivery model is being considered. Lifecycle cost analysis and payback analysis can be used to evaluate infrastructure operating and renewal options. In all cases, the decision approach used will be transparent, comprehensive, and appropriate for the situation. It will also include consideration of financial investment needs and benefits as relevant to the decision.

8 Asset Management Objectives

8.1 Purpose of AM Objectives

The SAMP and its AM objectives are the basis for delivery of the AM Policy and efficient compliance with the organization's business needs and achievement of goals. AM objectives provide a common focus and drive improvement efforts, and they support achievement of the City's Strategic priorities.

AM objectives will change over time as:

- The organization's AM system matures; and
- To respond to changes in priorities for the organization and the community.

Any changes to AM Objectives will be reflected in subsequent SAMP updates.

8.2 Core Improvement Areas

Core improvement areas have been identified for the City's AM system. The Asset Management Steering Committee will identify AM objectives within these core areas and coordinate initiatives to support improvements. The core improvement areas are:

- Governance
- Service Delivery
- Decision-making
- Performance
- Asset Management Information and Technology
- Business Processes
- Risk Management
- Sustainability and resilience

8.3 Asset Management Objectives

8.3.1 Governance

To implement the AM Policy and SAMP, and to maintain the continual improvement of the City's AM System, the appropriate level of governance must be in place throughout the organization for decision making. In addition, governance must be in place at the managerial level with regard to the project selection and delivery, data ownership, business processes, document ownership and control.

The organization will put in place an appropriate governance structure to ensure that the organization's AM capacity advances by:

- Clearly defining staff accountabilities and responsibilities related to the various elements of the AM process so that everyone is working toward the most effective and efficient service delivery approach.
- Regularly monitoring the progress of developing AM capacity and planning.
- Ensuring adequate resources are made available to build and sustain AM capacity.

8.3.2 Service Delivery

The City's mandate is to deliver services to its customers. The extent to which these services are provided is defined through levels of service. These levels of service need to establish reasonable expectations and take into consideration factors such as affordability, risk, and social and environmental impacts.

Level of service will be measured at three levels:

- Corporate – Sets the corporate objective: for example, providing safe drinking water.
- Customer – Defines the service that the asset manager/City provides to the customer; for example, supply of potable water of good quality, in sufficient quantity, and with the fewest interruptions.
- Asset (or technical) – Defines the technical requirements to achieve the service objectives; for example, water main break rates.

Taking this approach to the definition of level of service puts customer requirements at the centre of the City's planning processes by understanding and quantifying the value that

customers place on service. If there was not a service to be provided, there would not be a need for the assets.

The City will further its level of service approach by:

- Documenting the level of service at the corporate, customer, and asset levels, to provide a clear "line of sight" between corporate objectives and asset objectives.
- Producing a public engagement plan and consulting customers on an ongoing basis to understand their needs.
- Ensuring that investment and operational decisions are evaluated against their impacts on customers, the community, and the environment.

8.3.3 Decision-making

The City's SAMP and AM Plans will be based on accepted business practices and methodologies. These practices include using verifiable data, established decision criteria, risk frameworks and accepted financial models for planning and decision making. The City's AM Plans identify planned long term infrastructure investment and funding strategies.

Typical AM decision criteria are:

- Base Service Provision
    - Maintain Health and Safety
    - Maintain Essential Levels of Service
    - Maintain Quality Levels of Service
    - Maintain Aesthetic Level of Service
- Growth and Enhancement
    - Comply with New Legislation
    - Enhance Quality Levels of Service
    - Enhance Aesthetic Levels of Service
    - Enable Economy and Growth of the City
    - Environmental Improvement
    - Socio-cultural
    - Operational Efficiency
    - Resilience

Decision-making methodologies will include risk and service level assessments to ensure expected outcomes for customers are considered. Consideration of impacts to levels of service helps decision-makers assess the risks of not achieving customer expectations for levels of service. Using a risk-based approach helps decision-makers identify relative importance of different assets (asset criticality) in delivering the customer expecations for level of service.

8.3.4 Performance Measures

Performance measures will be established for every AM Objective to track performance and guide decisions on improvement intiatives.

AM Objectives align with the City's corporate objectives and priorities as determined by Council's strategic plan. As such, these priorities will change over time as the priorities of Council and the community change. The AM objectives are used to:

- Direct the development of the AM system;
- Align the asset lifecycle strategies in Business AM plans for each service area; and
- Guide the allocation of AM resources

The organization will develop processes to provide a systematic monitoring, analysis and evaluation of the organization's assets, AM System and AM management activity on a regular basis. Where appropriate, the process will utilize existing corporate processes linked to the City's annual Balanced Scorecard and periodic Citizen Satisfaction Syndicated Survey.

8.3.5 Asset Management Information and Technology

Management of the organization's assets requires the collection and maintenance of a wide range of relevant data for analysis and reporting. The effort, resources, and corporate discipline required to develop and sustain the quality of asset information are significant.

The City will develop a culture of consistent application and compliance with key data processes throughout the organization. As an asset-intensive organization with assets distributed across the City, technology makes a significant contribution to the efficient operation of the City, by the automatic collection, analysis and storage of data from assets and in communicating information.

The City will improve its understanding of IT needs by:

- Developing a data gap assessment that identifies critical information needs by AM activity, ensuring all information requirements have a purpose and reason supporting a defined business process or procedures aligned to AM.
- Assessing existing IT systems against those currently available in the market and developing a prioritized plan of system improvements, including new IT solutions and integration improvements.
- Focusing on those improvements that provide real efficiency benefits and provide a proven return on investment.
- Sustaining asset information through data governance that directs overall management of information (including deifinition of roles and responsibilities, standards, policies, and processes).
- Developing and implementing clearly defined roles and responsibilities of management owners of information and systems who will work together to ensure all arrangements are put in place to sustain data and manage information integrity.

8.3.6 Business Processes

Development, implementation and appropriate documentation of business processes and associated procedures will:

- Assure consistency across the organization.
- Identify opportunities for efficiency, integration, collaboration, and quality control.
- Assure repeatability and continuity of processes.
- Enable training of new employees.
- Preserve the intellectual property of the organization.

The organization will adopt a structured, robust and transparent approach to identify documentation requirements for key business processes by:

- Agreeing on the priority processes that are to be documented.
- Identifying the existing processes and procedures in use by the organization.
- Carrying out a gap analysis of the current versus desired processes.
- Developing a prioritized approach to the development of new processes.

8.3.7 Risk Management

The organization will develop a risk management framework for applying proven risk management practices in the decision-making process and to understand the criticality of the individual components of the City's infrastructure by:

- Using objective, repeatable methodologies, based on robust quantifications and understanding of probability and impact allowing an understanding of the risk of each asset and adjusting interventions accordingly.
- Producing robust forecasts of the changes in the risk profile of its asset base over time, enabling the organization to determine the optimum level of capital and operational investments needed to sustain assets.

8.3.8 Sustainability and Resilience

Nanaimo faces some significant social, economic, and environmental challenges that will affect our ability to manage our assets and deliver services sustainably over the long-term. Infrastructure investment decisions about when to build new and what to build; how and when to maintain assets; when to upgrade or extend the life of existing assets versus building new; and when to decommission an asset because it is no longer useful, safe, or cost effective, are critical to the sustainability and resilience of the community as well as the integrity of our natural environment. We need to make these decisions based on the expected long-term demand for a service, quality of service, risks, and costs to citizens, and knowledge of how the assets will be affected by changing demographics, culture and behaviours; technology; a changing climate and natural environment; and available natural resources.

Making asset investment decisions that consider how the environment, society and economy could change, and how asset investment decisions could accelerate or mitigate that change, is a critical part of our AM Strategy.

The City will integrate sustainability and resilience principles in the decision-making process to support socio-cultural, economic and environmental objectives by:

- Establishing cross-functional discussions on sustainability matters.
- Consider impact of investment decisions on socio-cultural, economic and environmental areas.
- Develop and report sustainability and resilience performance measures.

9 Continuous Improvement

Continual improvement is necessary to ensure AM processes and practices are adjusted for changing circumstances.

9.1 Improvement Process

The City will adopt a "Plan-Do-Check-Act" model, which considers long-, medium- and short-term AM needs to deliver coordinated and integrated investments in terms of capital projects and operational tasks.

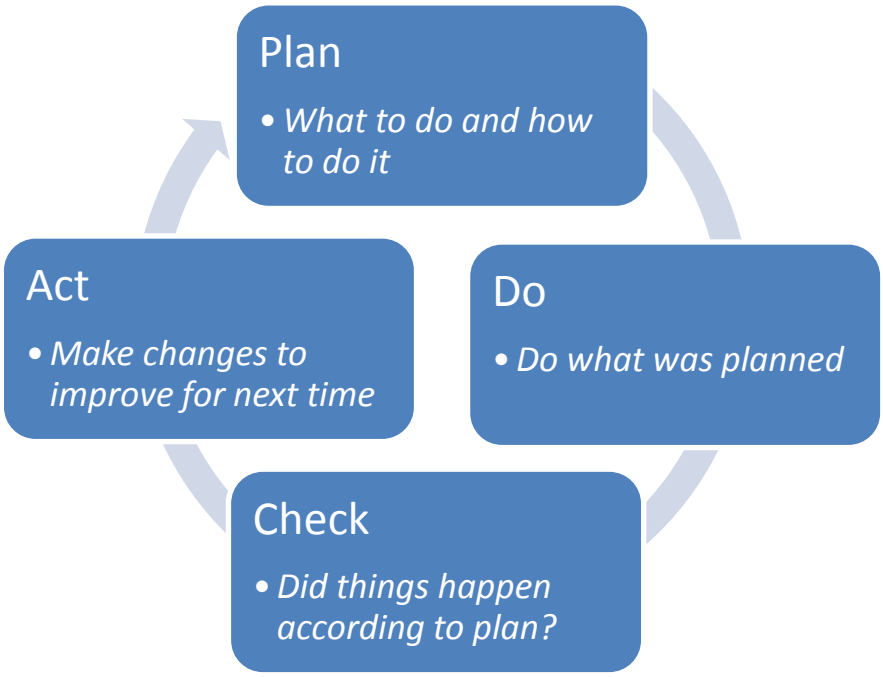


Figure 8: Deming Improvement Cycle

9.2 Review and Update Schedule

The City's SAMP is a guide for AM improvement initiatives and therefore it must be reviewed and updated every three to four years. AM performance measures and targets will be reviewed as measured results are available after year-end, and where it is warranted, recommendations will be made to the relevant decision-makers to action any needed updates. Other key AM documents, processes, and criteria will be reviewed and updated periodically as determined by the AM Steering Committee to address changing circumstances and to reflect improvements in AM practices as these are implemented.

9.3 SAMP: Asset Management Improvement Plan

This SAMP has identified specific AM objectives to improve the organization's AM system. Periodic reporting on the progress of initiatives is a responsibility of the AM Steering Committee. Subsequent SAMP updates will include a report on progress/completion for each AM objective and identify new AM objectives. Current AM Improvement Intiatives are;

AM Core Improvement Area	Initiative and Expected Outcome	Working Group Lead
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Service Delivery *Current project planned under LAMP Phase 2 funding for completion in 2018.*	Define levels of service for Parks (pilot) services and related financial analysis. Includes public engagement. To be used as a template for all City services	AM Steering Committee and working group.
Decision-making	With consideration to criteria for Risk Assessment, identify key criteria for decision-making and document the data requirements and analysis necessary to rate each criteria so it can be used in decision processes	AM Steering Committee and working group
Performance Measures	Develop a Performance Measurement and Monitoring Framework for the systematic monitoring, analysis, and evaluation of the organization's assets, service delivery, service costs, AM progress and AM effectiveness	AM Steering Committee and working group

AM Core Improvement Area	Initiative and Expected Outcome	Working Group Lead
Asset Management Information and Technology, Decision-making *Ongoing*	Investigate options to improve data collection, management and analysis for infrastructure maintenance and investment planning, and for decision making.	AM Steering Committee, working group and departmental managers
Business Processes .	Develop a collated record of existing Standard Operating Procedures (SOP) relating to Infrastructure Assets and Delivery of Services and review for gaps. Implement a project to close critical gaps in standard procedures.	AM Steering Committee and working group
Risk Management *Initial project completed in 2017. Follow on work required to implement.*	Develop a risk framework template to prioritize infrastructure investment and identify consequences. Implement for priority assets.	AM Steering Committee and working group
Sustainability and Resilience *AM Steering committee to review.*	Collaborate with sustainability initiatives to integrate sustainability and resilience principles into decision-making processes for infrastructure assets and delivery of services by the City.	AM Steering Committee and working group

10 Roles and Responsibilities

Establishing consistency in the application of AM practices across the organization requires a well-defined approach. This approach must be structured and clearly communicated so that everyone is aware of their roles and all are working toward a common purpose of:

- Informed decision making;
- Sustainable and resilient delivery of services; and
- Achievement of organizational objectives.

Key roles in the City's AM governance structure include: Council, CAO, senior management AM Champion, the Asset Management Steering Committee, managers and operational staff.

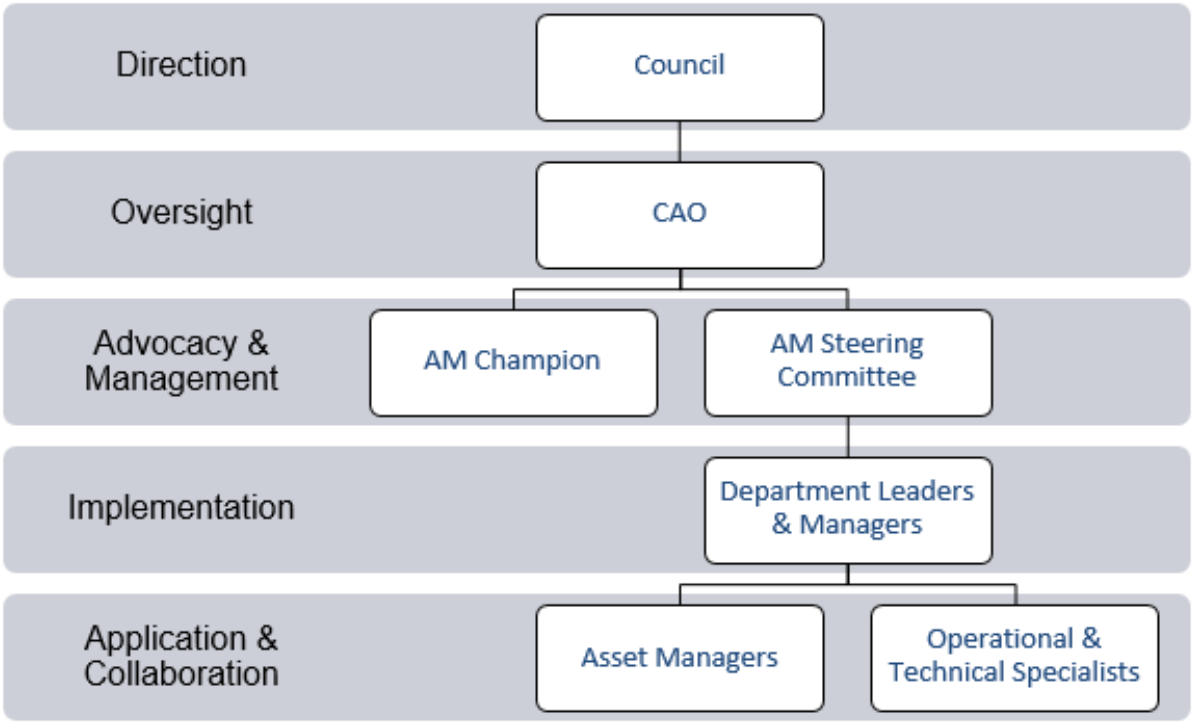

Figure 9: The City's AM Governance Structure

The following table outlines the key roles and responsibilities for the maintenance, effectiveness and improvement of the City's AM System. The CAO carries out their responsibilities through selection of an Asset Management Champion, establishment of the AM Steering Committee and allocation of appropriate resources.

Table 2: AM Roles and Responsibilities

Roles	Responsibilities
Council	• Approve Asset Management Policy • Approve level of service targets • Approve capital and operational programs and budgets
CAO	• Select Asset Management Champion • Establish Asset Management Steering Committee and Chair • Approve Strategic Asset Management Plan • Commit to the implementation and continuous improvement of asset management practices and systems to support the achievement of the City's organizational objectives • Report to Council on asset management plans
Asset Management Champion	• Member of senior leadership team • Lead external and internal communication that will develop and maintain awareness of asset management strategy and organizational progress • Lead change management
Asset Management Steering Committee	• AM Chair to coordinate communication and coordination for AM objectives and planning • Monitor and report to CAO on corporate-wide progress in implementing the AM policy and strategy • Maintain AM committee with representation of each service area and business area as relevant to the governance and implementation of good asset management practices within the organization • Provide overall guidance and direction for AM program development and implementation including setting priorities and monitoring progress

Roles	Responsibilities
Asset Management Steering Committee	• Ensure that adequate resources are available for the AM program implementation and overall AM program development • Play an active role in key decision making, customer management, risk management, and issue resolution, removing obstacles and providing direction pertaining to the AM strategy where necessary • Take necessary action to ensure the smooth integration of AM tools and strategies in the organization • Provide support and direction for AM practices at the division or department level • Provide strategic direction on the implementation of technologies and competencies needed to support the management of the organization's assets • Monitor progress and performance of the plans for AM program development and implementation • Ensure consistency of AM approaches across the organization including coordination of business-level asset management initiatives where integration across business units or service areas is desired or where a standardized approach is required • Agree on project prioritization criteria and weighting • Lead development of asset management plan updates
Department Managers	• Provide sponsorship for AM practices and concepts • Provide adequate resources to support AM goals • Provide leadership and support to CAO, AM Champion and AM Steering Committee

Roles	Responsibilities
Asset Managers	• Develop AM plans including renewal, upgrade and new infrastructure operating and investment requirements • Provide skills development to employees in specific AM disciplines • Create and implement the risk management process • Participate in implementation of task teams as part of the AM program development process • Participate in Asset Management Steering Committee
Employees	• Embrace the business processes and technology tools necessary to be effective at AM • Adopt a team based approach to service delivery and customer satisfaction • Capture quality data as part of daily operations • Make best use of available data to track performance and drive decision making • Seek to be innovative with respect to service delivery and adopt a culture of continual improvement • Participate in AM process implementation teams

APPENDIX

Appendix A: Definitions

Table 3: AM Terms and Definitions

Term	Definition
Asset condition	typically a measure of the physical condition of an asset, but may also include functional and demand considerations
Asset intervention	Refers to all measures, funded from either capital expenditures or operating expenditures either to maintain or enhance the performance of an asset
Asset management data and information	Meaningful data relating to assets and asset management
Asset Management Policy (AM Policy)	The asset management policy describes the organization's intentions and directions for asset management, as formally expressed by its senior management. It describes the principles and framework adopted in applying asset management to achieve the organization's strategic objectives
Asset Management Plan (AM Plan)	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
Asset Management System (AM System)	Management system for asset management whose function is to establish the asset management policy and asset management objectives
Business case evaluation	The framework to develop and evaluate business cases for investment decisions
Consequence of failure	A measure of the direct and indirect impacts on the City if an asset failure were to occur

Term	Definition
Critical assets	Assets for which the financial, business, or service-level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets
Customers	Refers to all parties that have an interest in the City's asset management system and delivery of services. Examples of internal customers are departments/employees, management and Council. Examples of external customers include customers, service providers and contractors, non-governmental organizations, agencies, regulatory authorities, investors or taxpayers. Customers are often referred to as stakeholders
Level of service	Describes the outputs or objectives that the City intends to deliver; includes measures at the corporate, customer and asset levels of the organization
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 decommissioning costs
Probability (likelihood) of failure	Probability is defined as the likelihood or chance that an event will occur within a specified time frame
Remaining life	the period from the current point in time to the time that an asset requires renewal
Risk management	The application of a formal process to the range of possible values relating to key factors associated with a risk to determine the resultant ranges of outcomes and their probability of occurrence

Term	Definition
Strategic Asset Management Plan (SAMP)	Document information that specifies: how organizational objectives are converted in asset management objectives: the scope and role of the asset management system in supporting achievement of the asset management objectives: and the approach for developing asset management plans. The SAMP provides a clear "line of sight" between high-level objectives and the day-to-day activities carried out to deliver services and manage assets. May also be referred to as AM Strategy
Sustainability	The pillars of sustainability include ensuring that current social, economic and environmental commitments are considered in investment decisions and that those decisions will not compromise the ability of future generations to meet their own needs
Triple bottom line	Expands on the traditional view of an organization's financial bottom line by also measuring the organization's commitment to social and environmental factors

Appendix B: Asset Overview

Examples of assets owned by the City are provided in the table below.

The city owns both managed and unmanaged land and includes in its inventories and asset management practices managed land. Examples of managed land include land on which parks or sports fields reside examples of unmanaged land include land under roadways and buildings.

The City recognizes the importance of natural assets and will include these in its inventories and asset management practices as information becomes available. Examples include marshes, forests and wildlife corridors.

Table 4: Asset Groups

Assets	Description
Water Utility	Control Stations, Dams, Distribution and Supply Mains, Natural Assets, Reservoirs, Water Treatment Plant
Sewer Utility	Lift Stations, Mains
Drainage	Detention Facilities, Mains, Natural Assets
Transportation	Bridges, Roads, Sidewalks, Street Lighting, Traffic Signals
Parks Amenities	Managed Land, Park Amenities, Playfields, Playground Equipment, Recreational Dams, Trails
Facilities	Civic Offices, Cultural Buildings, Fire Stations, Police Buildings, Parkades, Parks and Public Works Yards, Recreational Facilities
Information Technology	Communication Equipment, Hardware, Software
Fleet	Cars, Fire Apparatus, Heavy Equipment, Pickups, Sanitation Equipment, Zambonis