



Strategic Asset Management Plan (SAMP)



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STRATEGIC ASSET MANAGEMENT PLAN

Contents

- 1.0 ACRONYMS AND ABBREVIATIONS 1
 - 1.1. Acronyms..... 1
 - 1.2. Abbreviations & Symbols 1
- 2.0 TERMS AND DEFINITIONS..... 2
- 3.0 BACKGROUND 5
- 4.0 PURPOSE AND SCOPE..... 7
 - 4.1. Purpose of the Strategic Asset Management Plan..... 7
 - 4.2. Intended Outcomes of the Strategic Asset Management Plan..... 8
 - 4.3. Scope of the Strategic Asset Management Plan 8
 - 4.4. Audience..... 13
- 5.0 STRATEGIC ALIGNMENT OF THE ASSET MANAGEMENT SYSTEM 14
 - 5.1. How Asset Management Achieves Organizational Objectives 16
- 6.0 NEEDS AND EXPECTATIONS OF STAKEHOLDERS 17
 - 6.1. Understanding Stakeholder Needs and Expectations..... 17
 - 6.2. External Asset Management Stakeholders 17
 - 6.3. Internal Asset Management Stakeholders..... 17
- 7.0 BUSINESS CONTEXT & ASSET MANAGEMENT MATURITY 19
 - 7.1. Business Context 19
 - 7.2. Asset Management Maturity 20
- 8.0 ASSET MANAGEMENT DECISION MAKING APPROACH..... 21
 - 8.1. Evolution of the Decision Making Approach..... 21
 - 8.2. Current Decision Making Process..... 21
 - 8.3. Developing the Decision-Making Process 23
 - 8.4. Documents to Support Decision Making..... 24
- 9.0 ASSET MANAGEMENT OBJECTIVES & PERFORMANCE TARGETS..... 25
 - 9.1. Organizational Objectives 25
 - 9.2. Establishing the Asset Management Objectives 27
 - 9.3. Asset Management Objectives 27
 - 9.4. Achieving the Asset Management Objectives..... 28
 - 9.5. Reviewing the Asset Management Objectives..... 29

9.6.	Communicating the AM Policy and AM Objectives	29
10.0	ASSET MANAGEMENT PROCESSES AND PRACTICES	30
10.1.	Framework	30
10.2.	Tools	32
11.0	ASSET MANAGEMENT ROLES AND RESPONSIBILITIES	33
11.1.	Asset Management Policy	33
11.2.	Governance of the Asset Management System.....	33
11.3.	AM Governance Structure Roles and Responsibilities.....	34
11.3.1.	Council.....	34
11.3.2.	Chief Administrative Officer (CAO)	34
11.3.3.	AM Steering Committee.....	35
11.3.4.	AM Coordinator (AMC)	36
11.3.5.	Senior Management Team.....	36
11.3.6.	Sustainability Coordinator.....	37
12.0	STRATEGIC ASSET MANAGEMENT PLAN RISK/OPPORTUNITIES	38
13.0	MONITORING, REVIEW, CONTINUAL IMPROVEMENT & INNOVATION	40
13.1.	Continual Improvement	40
13.2.	Management Reviews.....	40
13.3.	Internal Audits.....	41
13.4.	Monitoring & Review of the Asset Management Strategy	41
13.5.	Improvement Plan for the Asset Management System	41
14.0	SUPPORTING REFERENCES AND RESOURCES.....	43
14.1.	References.....	43
15.0	REVISION HISTORY	44

Figures

Figure 1 – Functional relationships of the SAMP	7
Figure 2 – Relationship between key terms (ISO 55001)	15
Figure 3 - Typical components within the different levels of management	15
Figure 4 - Revelstoke Performance Management Framework	16
Figure 5 - AM Decision Making Maturity Progression	21
Figure 6 - AM Decision Making Process	22
Figure 7 - Revelstoke Sustainability Framework	26
Figure 8 - BC Framework for Sustainable Service Delivery	30
Figure 9 - City of Revelstoke's Asset Management Governance Structure	34

Figure 10 - Revelstoke's Senior Management Team.....	36
Figure 11 - Deming Cycle for Continuous Improvement.....	40

Tables

Table 1 - Services and Supporting Assets.....	8
Table 2 - Alternate or Shared Asset Management Responsibilities.....	11
Table 3- Simple Decision Criteria	22
Table 4- Asset Management Objectives.....	27
Table 5- Core AM System Processes and Practices.....	31
Table 6- Core AM System Tools	32
Table 7- Development and Improvement Areas.....	41

Appendices

- Appendix A: Risk Factors and Ratings
- Appendix B: Asset Management Maturity Matrix
- Appendix C: Asset Management Framework Details
- Appendix D: Organizational Structure

1.0 ACRONYMS AND ABBREVIATIONS

1.1.Acronyms

AM	Asset Management
AMC	Asset Management Coordinator
AMP(s)	Asset Management Plan(s)
AS	Asset Steward
CAO	Chief Administrative Officer
ICSP	Integrated Community Sustainability Plan
IRM	Integrated Risk Management
ISO	International Organization for Standardization
LoS	Level of Service
NAMS	New Zealand National Asset Management Support Group
OCP	Official Community Plan
O & M	Operation and Maintenance
SAM	Service and Asset Manager
SAMP	Strategic Asset Management Plan
SD	Service Director

1.2.Abbreviations & Symbols

The City	The City of Revelstoke
ISO 55000*	International Organization for Standardization—Standard for Asset Management (*includes ISO 55001 and ISO 55002)



The leaf symbol appears in the left margin beside sections of the SAMP that directly address sustainability.



The work-in-progress symbol appears in the left margin beside sections of the SAMP that describe AM system components that are not fully developed.

2.0 TERMS AND DEFINITIONS

Asset: “an item, thing or entity that has potential or actual value to an organization” (ISO 55000, 2014). The value can be tangible or intangible, financial or non-financial and includes consideration of risks and liabilities.

Asset life cycle: the time interval that commences with the identification of the need for an asset and terminates with the decommissioning of the asset or any liabilities thereafter (PAS55, 2004). This covers all phases of an asset’s life from planning, design, acquisition/creation, deployment, commissioning, operation, maintenance, repair, refurbishment, decommissioning and disposal.

Asset management (AM): coordinated activities that help an organization to realize value from its assets. It encompasses all asset types—tangible and intangible, individual components or complex systems, and all activities involved in the asset’s life cycle. Asset management translates organizational objectives into asset-related decisions, plans and activities while managing risk. (ISO 55000, 2014)

Asset management objectives (AM objectives): asset management results to be achieved (IIMM, 2015). Asset management objectives provide a link between organizational objectives and asset management plans. Asset management objectives describe, in general terms, the activities and actions required to achieve required asset outcomes (product or service). These activities and actions are described in greater detail in individual asset management plans. (ISO 55002, 2014)

Asset management system (AM system): a management system for asset management that establishes an organization’s AM policy and AM objectives (ISO 55000, 2014). An AM system is not necessarily a technological system, but a business model or standard management approach that outlines links between the key elements and practices of an effective AM program. An AM system should be able to accommodate the management of assets at various organizational levels, ranging from the operational level where discrete assets are managed up to the corporate level where integration across asset systems, networks or portfolios is desired.

Asset management plan (AMP): documented information that specifies the activities, resources and timescales required for asset-based services to achieve the organization’s AM objectives. (ISO 55000, 2014)

Asset management policy (AM policy): “a high level statement of an organization’s principles and approach to asset management” (IIMM, 2015).

Asset portfolio: assets that are within the scope of an AM system.

Asset type: a grouping of assets that have common characteristics that distinguish those assets as a group or class (e.g. information assets, linear assets, infrastructure assets etc.) (ISO 55000, 2014).

Capital works planning: plans to create new assets, renew assets, expand or upgrade assets or to increase the capacity of original assets beyond their original design capacity or service potential.

Residents: the population or residents of Revelstoke as a whole (Corporate definition).

Gap analysis: “a method of assessing the gap between an organization’s current AM practices and the future desirable AM practices” (IIMM, 2015). A gap analysis may also be referred to as a needs analysis or improvement planning.

Information: data in context.

Infrastructure: a system of core assets, facilities and/or equipment.

Integrated risk management (IRM): a systematic, organization-wide process designed to identify, analyze, mitigate and report on risks in order to provide reasonable assurance on the achievement of an organization's objectives.

Levels of service (LoS): a definition of the desired output for a particular asset, activity, or service area provided by an organization.

- a. **Customer LoS:** description of how the customer experiences the service (e.g. frequency of service disruption).
- b. **Technical LoS:** description of the asset performance (e.g. water main break rate).
- c. **Operational LoS:** description of the activities performed to the assets to achieve technical and customer LoS (e.g. frequency of street sweeping).

Long-term financial plan: financial planning on a 10 to 20 year horizon.

Management strategies: strategies for the management of the assets over the long term. Management strategies consist of combinations of replacement / refurbishment options and allow for a range of scenarios to be costed.

Operational and maintenance plans: plans and criteria for day-to-day operations and maintenance and decision making.

Organizational objective: organizational results to be achieved. The organizational objectives provide high-level, comprehensive context and direction to an organization’s activities, including AM activities. (ISO 55002, 2014)

Output: specific, measurable events that contribute to the desired outcome of a service. For example, when buses arrive on schedule every day of the week, this output (event) results in a reliable bus service, which is the desired outcome.

Outcome: the overall desired or actual result of a service. Service level outcomes define what the service is supposed to achieve, for example, a “robust, reliable” service.

Performance measure: a qualitative or quantitative measure of the actual performance of a service or activity against a standard or target. Performance measures (also known as performance indicators) commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction (delivering LoS). (IIMM, 2015).

Risk: “the effect of uncertainty on objectives” (ISO 55000, 2014). Risk events may compromise the ability of an organization to meet its objectives (IIMM, 2015). Risk is often expressed as the consequences of an event in combination with the associated likelihood of that event occurring (ISO 55000, 2014).

Risk management: “coordinated activities to direct and control an organization with regard to risk” (IIMM, 2015). Effective risk management can reduce financial losses (including liabilities), improve health and safety, minimize negative environmental and social impacts and improve an organization’s reputation (ISO 55000, 2014).

Strategic asset management plan (SAMP): “documented information that specifies how organizational objectives are to be converted into AM objectives, the approach for developing AMPs and the role of the AM system in supporting achievement of the AM objectives” (ISO 55000, 2014).

Stakeholder: person or group having an interest in the organization’s performance, success or the impact of its activities.

Sustainability: the endurance of systems and processes (Wikipedia). A core assumption of sustainability is **sustainable development** which was defined by the 1987 Brundtland Report: *Our Common Future* as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

3.0 BACKGROUND

Our Community's Vision

Council's vision for the City of Revelstoke is a safe, livable, sustainable and economically vibrant community underpinned by the delivery of sustainable, well-managed services. The City is responsible for managing the assets that support these services in an effective, efficient and sustainable manner.

The performance of the City's service-supporting assets provides the foundation for its economic development, competitiveness, prosperity, reputation and the overall quality of life for its residents. Reliable and well-maintained assets are, therefore, essential for the City to deliver core services to the community.

Sustainability



Sustainability has long been a community value in Revelstoke. Crafted in 1994 and confirmed in 2009, Revelstoke's Community Vision begins, *"Revelstoke will be a leader in achieving a sustainable community by balancing environmental, social and economic values within a local, regional and global context."* The Vision includes the following key themes:

- economic resilience
- environmental protection
- inclusivity and support of all residents and their diversity
- protection and conservation of our mountain community heritage

From a municipal services perspective, sustainability means providing services that are affordable over the long term and that balance benefit to the community with ability and willingness to pay for the service.

Change

In the face of challenging local and global environmental issues, increasing costs and changing economies, the City must consider new ways to incorporate sustainability and long-term financial planning into all its activities. A scenario of prolonged funding shortfalls will create a backlog of priority projects that will eventually affect the City's ability to deliver quality public service for its residents.

Asset Management

To address these and other challenges, the City is adopting an asset management (AM) approach. Asset management is a business model and management system made up of many elements (called asset management practices) for the sustainable creation, acquisition, maintenance, operation, rehabilitation and disposal of assets. The most compelling reason for implementing AM—and why it is required by legislation in some countries and is gaining popularity throughout Canada—is its focus on evidence-based decision making. Asset

management practices will help the City find the responsible balance (economic, environmental, social and cultural) between what it can provide and what it can afford to provide.

Asset management will help the City determine its service level and asset priorities and options. It will help clarify future consequences and impacts of different asset and service level decisions by providing decision makers with the information and the decision support tools to

- make well-informed, evidence-based decisions,
- validate priorities in a defensible way,
- understand what factors impact service and their associated costs, and
- reduce the total cost of service over the lifecycle of assets.

Asset management will also enable to City to provide proof of good governance and measures of current and long-term service delivery performance and sustainability.

To advance the management of municipal services while balancing smart growth with a sustainable quality of life, the City is working to develop an asset AM system based on the approach set out in the new International Standard for AM: ISO 55001.

Implementing and Documenting Asset Management

In order to guide staff in the effective delivery of services, Council typically adopts policies and strategies for important issues that can be used by staff to make decisions that align with Council's vision, goals and objectives. Council has adopted an AM policy (PW-15) that instructs the City to implement an AM system and provides guiding principles and requirements for the AM system. This strategic asset management plan (SAMP) is closely linked to the AM policy. It describes how the policy will be implemented and provides details on how the goals and objectives of the AM system will be achieved.

4.0 PURPOSE AND SCOPE

4.1.Purpose of the Strategic Asset Management Plan

This strategic asset management plan (SAMP) is a core component of the City's asset management (AM) system. The SAMP is a high level document that describes how the AM policy will be implemented. It documents the City's objectives for asset management (AM objectives) and describes the role of the AM system in supporting achievement of those objectives by

- describing the role of AM in achieving organizational objectives within the scope of the mandated principles and requirements as stated in the AM policy,
- documenting AM objectives and how they are linked to the organizational objectives, and by providing a clear framework which shows the relationship between organizational and AM objectives,
- providing a framework for the implementation, operation and maintenance of the AM system and implementation of specific AM practices,
- defining roles and responsibilities for the implementation and management of the AM system and for service delivery,
- defining the scope of the AM system.

The functional relationship between the SAMP and other documents and activities in the AM system is shown in Figure 1, below.

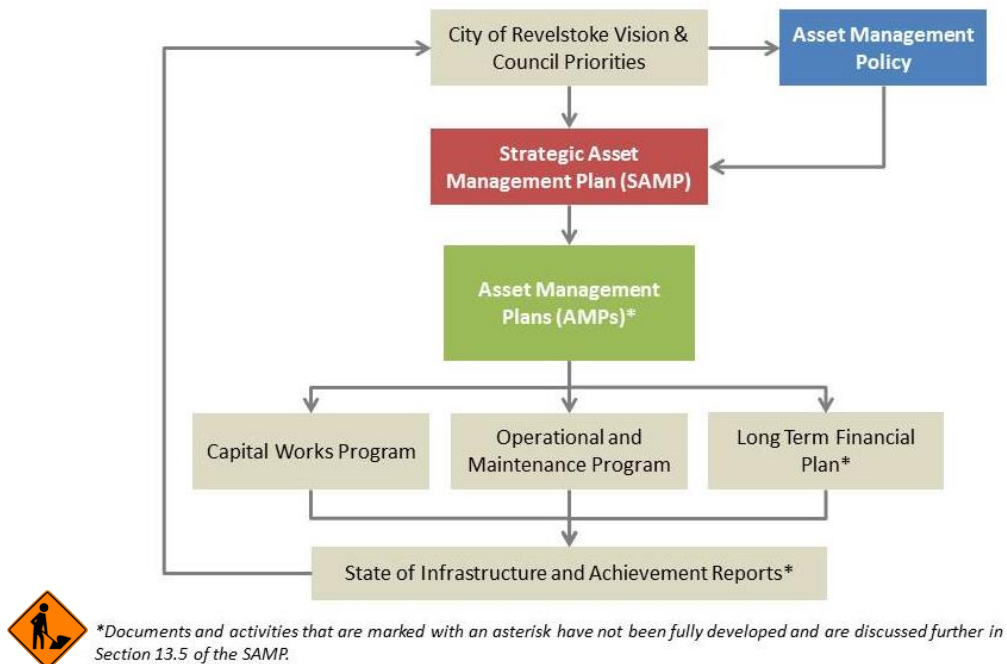


Figure 1 – Functional relationships of the SAMP

4.2. Intended Outcomes 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 accountability and responsibility
- sustainable service delivery
- efficient use of resources
- defined service levels and outcomes
- quality stakeholder engagement
- managed risk
- appropriate AM practices
- transparent monitoring and reporting
- continuous improvement

In addition to the above goals, the City's AM policy (PW-15) provides details on the principles to guide development and implementation of the AM system.

4.3. Scope of the Strategic Asset Management Plan

Assets and Services

The following table (Table 1) shows the core services in the City's AM system and examples of supporting assets. The supporting assets listed in this table are provided to help readers understand the scope of the service but are not intended to be a complete list. Asset management plans (AMPs) will provide a complete list of all service-supporting assets.

Table 1 - Services and Supporting Assets

Service	Supporting Assets
<p>Transportation: The City provides transportation services to ensure safe and unimpeded movement in and around Revelstoke. Services include the physical transportation infrastructure as well as infrastructure maintenance services such as snow removal. The City also provides year-round bus service and a resort shuttle service during the winter months.</p>	<ul style="list-style-type: none"> • Roads and bridges • Sidewalks • Parking lots • Road signage • Snow removal equipment • Street lighting and signals • Transit fleet
<p>Water Treatment and Supply: The City provides a safe and reliable water treatment and distribution system. Services include the physical water infrastructure as well as testing and reporting activities required to meet legislated health and safety requirements.</p>	<ul style="list-style-type: none"> • Water mains and laterals • Water fittings, valves, tees, PRVs etc. • Water intake and treatment facility • Water reservoirs and tanks • Water lift stations / pumps

Service	Supporting Assets
<p>Sewage Collection, Treatment and Disposal: The City provides safe and reliable sewage collection, treatment and disposal. Services include the physical sanitary sewer infrastructure as well and testing and reporting activities required to meet legislated health and safety requirements.</p>	<ul style="list-style-type: none"> • Sewer mains and lateral • Sewer fittings, tees, inspection chambers etc. • Sewage treatment facility • Sewage lift stations / pumps
<p>Stormwater Management: The City provides infrastructure to manage stormwater.</p>	<ul style="list-style-type: none"> • Stormwater mains, laterals, culverts, ditches • Catch basins, dry drains
<p>Flood Management: The City provides dikes to control flooding from the Illecillewaet River.</p>	<ul style="list-style-type: none"> • Earthfill dike system
<p>Solid Waste Management: The City provides garbage collection services and provides information to the public about recycling and waste services provided by MMBC and the CSRD.</p>	<ul style="list-style-type: none"> • Garbage truck(s) • Public garbage bins
<p>Parks and Recreation: The City provides outdoor spaces and infrastructure to support recreation, wellness and local sport activities. The City also provides recreational classes and services delivered in both outdoor and indoor recreation facilities (no physical assets).</p>	<ul style="list-style-type: none"> • Parks • Trails and pathways • Playgrounds • Benches and picnic tables • Playing fields and associated equipment • Stadium lighting • Street trees, planters, beds and hanging baskets • Public art
<p>Civic Building and Facilities: The City provides buildings and facilities to house a variety of activities and functions including recreation, business, arts and culture, maintenance and operations, and protection services.</p>	<ul style="list-style-type: none"> • City Hall • Court House • Fire Hall, RCMP Station, Emergency Centre • Recreation Centre including Seniors' Centre and Aquatic Centre • Museum • Public Works Yard (including animal shelter) • Arena and Curling Rink • Visual Arts Centre • Forestry Museum • Cemetery
<p>Protection Services: The City provides fire and police protection services. (Note that the Fire Hall and RCMP station are included in the Civic Building and Facility service area.)</p>	<ul style="list-style-type: none"> • Emergency response and patrol vehicles • Specialized equipment such as hoses, pumps, and communication equipment

Service	Supporting Assets
<p>Information Technology: The City provides IT services to staff to assist and support them in their daily tasks and duties. The City also provides wireless internet in some public buildings.</p>	<ul style="list-style-type: none"> • Network assets (including servers, cables, software etc.) • User assets (including CPUs, monitors, phones, projection equipment etc.)
<p>Fleet and Heavy Equipment: The City provides fleet and heavy equipment to carry out maintenance and construction activities, to support daily tasks and duties and for other purposes. (Note that emergency response vehicles are included in the Protection Services area.)</p>	<ul style="list-style-type: none"> • City work vehicles • Heavy equipment

Each of these service areas operates in a unique environment with different inputs, goals and priorities. Detailed descriptions of assets are provided in the relevant service area asset management plans (AMPs) which are separate documents from this SAMP.



Certain other special classes of assets may fall within the scope of the City’s AM system in the future as a greater understanding of these assets is developed. For example,



- **natural assets (ecosystems, drainage channels, rivers, aquifers, etc.)**
- **land and land improvements**

City Departments and Functions and External Organizations

The scope of the SAMP covers all City departments and functions that provide or support the provision of the services listed above.

In addition to the above-mentioned assets, there are a number of assets for which the City is not fully responsible or are managed through an alternate governing structure (corporations) but that are important components of service delivery. These assets are within the scope of the AM system but each are managed in different ways as described in existing contracts and agreements. Where appropriate, the City will work towards creating or improving existing AMPs with service-delivery partners and, where possible, will incorporate AM principles into future contracts and agreements. The following table shows organizations or service partners with which the City shares asset management responsibility, describes the current agreements in place and suggests steps for better alignment with the City’s AM system in the future.

Table 2 - Alternate or Shared Asset Management Responsibilities

Organization or Service Partner	Current Service Delivery Structure	Current Governing Relationship	Future Steps to Align with AM system
Royal Canadian Mounted Police (RCMP)	RCMP services are fully funded by the City and provided by the RCMP. The City owns and is responsible for maintenance of the RCMP building.	The City has a contract with the RCMP and is required to provide services and maintenance at specified levels.	The City will create a building and facilities AMP that includes the RCMP building. The City will encourage incorporation of AM principles into all operations.
Revelstoke Visual Arts Society	The City owns and maintains the Arts Centre Building. The Arts Society provides cultural services in the Arts Centre and around the City.	The Visual Arts Society has an agreement with the City to use the Arts Centre Building and to provide cultural services.	The City will create a building and facilities AMP that includes the Visual Arts Centre Building. The City will encourage incorporation of AM principles into all operations.
Revelstoke Golf Club	The City owns the golf course and associated buildings. The Golf Club leases the property from the City and runs the golf course.	Maintenance duties are shared between the Club and City. Details of responsibilities are described in the existing lease agreement.	The City will create a building and facilities AMP that includes the buildings on the Golf Course property. The City will work with the Golf Club to determine AMP details and responsibilities. The City will encourage incorporation of AM principles into all operations.
Williamson Lake Campground	The City owns the campground and hires a caretaker to run the facility during the operating season.	Operation and maintenance of the campground and facility are carried out by a caretaker as described in an existing contract.	The City will create a building and facilities AMP that includes Williamson Lake Campground. The City will encourage incorporation of AM principles into existing operations.

Organization or Service Partner	Current Service Delivery Structure	Current Governing Relationship	Future Steps to Align with AM system
Revelstoke Forestry Museum	The City owns the museum land and building. The Forestry Museum operates the site.	The City maintains the building and land and the Forestry Museum has a contract to provide services from the site.	The City will create a building and facilities AMP that includes the Forestry Museum. The City will encourage incorporation of AM principles into all operations.
Revelstoke Community Forest Corporation (RCFC)	The City owns the RCFC which owns and manages a tree farm license (TFL) north of Revelstoke. Profits are returned to the community.	RCFC Board of Directors oversees all aspects of the TFL with employees and contractors carrying out operations. Operations are governed by a Forest Stewardship Plan. RCFC is certified to the Sustainable Forestry Initiative (SFI) standard which includes third party auditing.	The RCFC is currently operating in a progressive and sustainable manner. The City will encourage incorporation of AM principles into all operations.
Revelstoke Community Energy Corporation (RCEC)	The City owns the RCEC which operates a district energy system that utilizes local fuel supplies (wood waste from local mill). Energy is provided to 10 buildings – 3 municipal buildings, 2 schools, 1 federal building and 4 private buildings. RCEC revenues stay in the community.	The RCEC Board of Directors manages the corporation with employees and contractors carrying out operations.	The RCEC is currently operating in a progressive and sustainable manner. The City will encourage incorporation of AM principles into all operations.
Private Utilities – BC Hydro, Telus, Fortis and Yourlink (cable, internet)	These private utilities are managed and owned by others but some physical infrastructure is located on, above, or under City infrastructure.	The City has no involvement in asset planning.	The City will work to encourage and support integrated planning and the coordination of physical works to maximize efficiency and minimize community disruption.

The Period of Responsibility

The period of responsibility for the assets and services that are owned and managed by the City is indefinite. The City will manage all assets throughout their reasonable lifespans and will provide the service that the assets support indefinitely unless alternative methods are employed or the service is no longer required. For assets and services either owned or managed by an external organization, the period of responsibility for the City will be determined by contract or service level agreement.

4.4. Audience

The intended audience for this SAMP is the Chief Administrative Officer (CAO), the Asset Management Steering Committee and Service and Asset Managers (see Figure 9: *City of Revelstoke's Asset Management Governance Structure*). The SAMP is also available to all City staff and stakeholders.

5.0 STRATEGIC ALIGNMENT OF THE ASSET MANAGEMENT SYSTEM

An asset management (AM) system does not stand alone. The City's AM policy and the strategic asset management plan (SAMP) are interrelated documents. The AM policy outlines principles and requirements for the AM system and the SAMP provides details on how the requirements will be implemented and achieved.

The AM objectives described in this SAMP are aligned with and support achievement of the organizational objectives. This alignment is maintained through an iterative process. Realistic and achievable organizational objectives are not developed in isolation therefore future revisions of the organizational objectives will use asset capabilities and performance as key inputs. (See Section 9 for more information about the relationship between organizational and AM objectives.)



The integration of AM objectives throughout the City's lines of business is reinforced through links and references to corporate documents. In cases where documentation was created prior to the City formalizing its AM system, it will take time for wording and content to be revised to match AM terminology. Where possible, Council and staff will consider the AM policy and this SAMP and integrate AM objectives and intent when updating and developing corporate documents, including but not limited to:

- the Official Community Plan (OCP)
- the Integrated Community Sustainability Plan (ICSP)
- corporate strategic plans
- long-term financial plans
- annual reports
- funding and financial strategies
- operational plans and budgets
- design standards and specifications

The City's AM system and AM objectives do not replace existing corporate strategies, business planning and budget management systems and processes. Rather, the AM system and objectives are meant to align with these initiatives and to provide guidance for future changes. Asset management objectives do not supersede existing or future legislative requirements.

In addition to being aligned with corporate documents, the AM system is an integral part of the City's overall organizational structure. The following diagram (Figure 2) outlines the relationship between an organization, asset management, an asset management system and an asset portfolio.

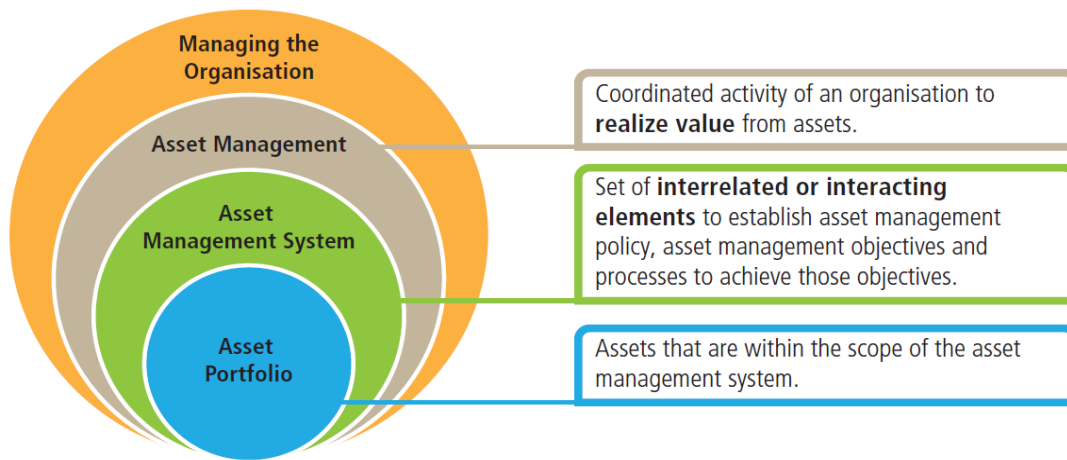


Figure 2 – Relationship between key terms (ISO 55001)

The AM system impacts the whole City, including its stakeholders and external service providers, and is intended to link and integrate the City’s asset-based services with supporting functions that would otherwise be managed or operated in isolation. The AM system operates within the context of the City’s wider management practices as illustrated in Figure 3, below.

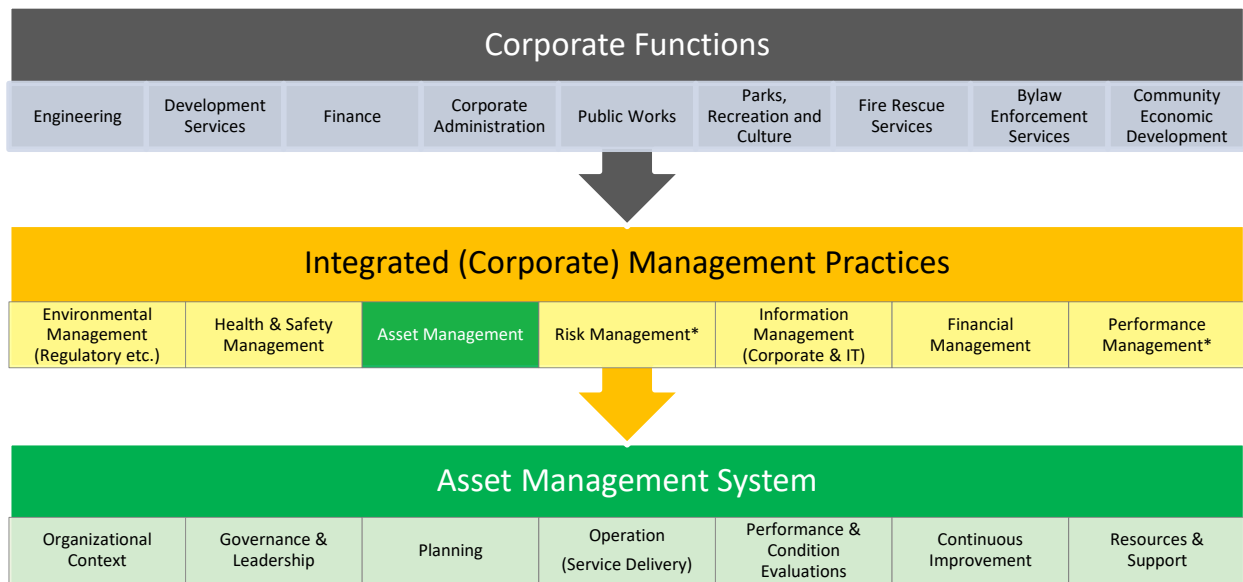


Figure 3 - Typical components within the different levels of management



*Integrated (Corporate) Management Practices marked with an asterisk are under development and are not yet formalized.

5.1. How Asset Management Achieves 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 SAMP 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.

Asset management translates the overall objectives of the City into technical and financial objectives, decisions, plans and asset-related activities. It provides assurance that those objectives can be achieved consistently and sustainably over time. The following figure shows how the hierarchy of objectives and performance reporting work together to achieve the organizational objectives:

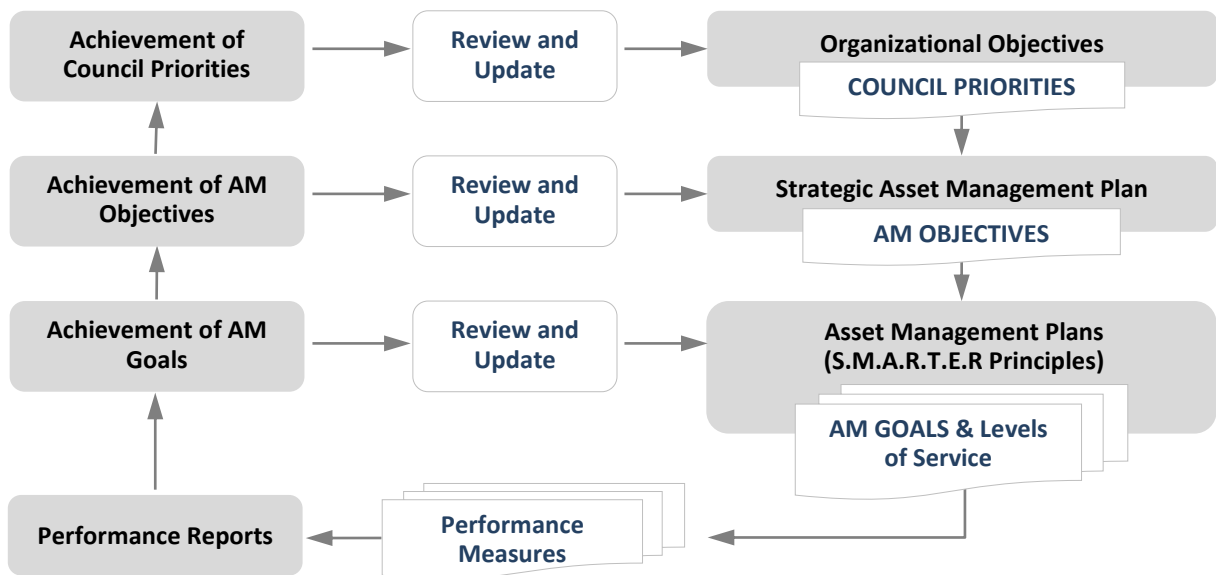


Figure 4 - Revelstoke Performance Management Framework

6.0 NEEDS AND EXPECTATIONS OF STAKEHOLDERS

6.1. Understanding Stakeholder Needs and Expectations

The essence of asset management (AM) is providing services to customers. Both internal and external customers are affected by the management of the City's infrastructure and are, therefore, key stakeholders in the AM system. Customers' needs (and the risks that will arise if these needs are not met) must be understood and addressed in order for the strategic asset management plan (SAMP) to be successfully implemented.

A detailed identification of service-receiving stakeholders (customers), their needs and means of engagement will be included in the Level of Service (LoS) sections of each asset management plan (AMP). In general, these stakeholders can be described as external or internal asset management stakeholders.

6.2. External Asset Management Stakeholders

The public are the primary external stakeholders in the AM system and are the main beneficiaries of City services. The public also contribute operating funds through taxes, charges and fees. There are other groups with external stakeholder interests including:

- goods & services providers to the City
- the Government of BC
- grant funders
- regulators
- developers
- visitors

External Stakeholder Engagement



The City doesn't have a formalized process for engaging with external stakeholders. This is a core improvement item for the AM system.

6.3. Internal Asset Management Stakeholders

Specific internal stakeholders of the AM system and their respective roles and responsibilities are outlined in Section 11.0 of this SAMP and in the AM policy. In general these stakeholders fall into the following three key areas:

- a) Councillors, CAO and the senior management team: responsible for establishing and promoting the City's vision, mission and objectives, and for the approval of the AM policy and objectives.
- b) Service & asset managers: responsible for the development and implementation of service area asset management plans (AMPs) and operational plans to deliver the asset outcomes.
- c) Asset stewards (operational staff): responsible for the implementation of the AMPs and operational plans.

Internal Stakeholder Engagement

Engagement with internal stakeholder groups is achieved through a variety of formal and informal communication channels including email, newsletters, meetings, working group workshops for specific assignments, formal AM training, and other formal and informal meetings, discussions, and workshops as may be required.

Within the City, the senior management team holds meetings on a weekly basis. This group represents all the City departments and covers the majority of the key internal stakeholders.

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

Irrespective of future formal efforts to engage with stakeholders, informal means (including feedback through elected officials and City staff) will remain a critical component of the City's service delivery culture.

7.0 BUSINESS CONTEXT & ASSET MANAGEMENT MATURITY

7.1. Business Context

The City of Revelstoke sits within the Columbia Shuswap Regional District and delivers municipal services to a population of approximately 6,700. Because of its geographic location in the mountains, the City is relatively isolated when compared to other communities in southern British Columbia. This is an important factor in determining how the City delivers services.

The services that the City provides and the needs of the community, both now and into the future, determine the requirements for Council's provision and management of the community's assets. The complexities and uncertainties of the operating environment (e.g. scale of service, capacity of the organization, community needs and challenges, and the complexity of the engineering systems) determine how assets need to be managed.

The NAMS International Infrastructure Manual (IIMM) details three levels of asset management (AM) practice, Core, Intermediate and Advanced (also referred to as Comprehensive)¹. A Core level is seen as the minimum required level in Canada for all asset management areas, while an Advanced level is recommended where the risks to the organisation or external requirements justify the additional level of effort required to meet this higher level.

The City periodically reviews its asset areas and the risks factors facing them. The current reviews confirm that Core practice is generally appropriate across the City's services and asset groups, with some Intermediate practices required for

1. water services (to manage increasing legislative requirements);
2. transportation and sewer services (to manage long-term sustainability of service concerns); and
3. managing the effects of climate and land use changes across all portfolios.

Based on this analysis, the focus of this strategic asset management plan (SAMP) is to cover the Core (Basic) level with the goal of progressing through to an Intermediate target level in some areas. Given the importance of the infrastructure services to the local community and economy and the significant proportion of the City's budget that they represent, it is

¹ **'Intermediate'** asset management practice is undertaken at a level between 'Core' and 'Comprehensive' practice. The focus is to build on the basic technical asset management planning of 'Core' practice by introducing improved maintenance management and more advanced asset management techniques (as appropriate). Further use is made of risk management, asset lifecycle management, and service standard optimisation techniques. **'Comprehensive'** asset management practice is system optimisation planning undertaken to optimise activities and programmes to meet agreed current and future service standards. This is achieved through the development of management tactics based on the collection and analysis of key information on asset condition, performance, demand for service, lifecycle costs, risk costs and asset lifecycle treatment options.

important that asset management plans (AMPs) are progressively developed into authoritative documents that provide a high level of certainty in identifying and defining strategies for sustainable service delivery.

Periodically assessing and adopting the appropriate AM practice level allows the City to identify best practices and focus resources wisely. Assessment results from the review of asset areas and risk factors are shown in Appendix A.

7.2.Asset Management Maturity

The City's AM maturity and competence will continue to improve as more components of the AM system are incorporated into daily practice. Appendix B contains a copy of the AM self-assessment that the City completed in 2015 as part of its participation in the Federation of Canadian Municipalities' Leadership in Asset Management program. Over the next review cycle of this SAMP, the City will conduct a detailed maturity assessment against Asset Management BC criteria, and a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis related to AM. This will be used to inform an assessment of gaps and development of a prioritized improvement plan.

8.0 ASSET MANAGEMENT DECISION MAKING APPROACH

8.1. Evolution of the Decision Making Approach



The City currently follows a traditional maintenance management approach to delivering services and does not have a consistent, documented method of investment decision making. This makes it difficult for decision makers to objectively judge how best to balance needs and benefits and to assign appropriate funding. The current situation also makes it difficult for decision makers to know the long-term impacts of their funding choices.

One of the fundamental goals of the City’s asset management (AM) system is to support informed decision making that is based on the whole of life costs of delivering levels of service which support the organizational objectives (see Section 4.2 for more details). By following an AM approach, decision making will be linked to achievement of organizational objectives and will reference and be supported by information contained in the City’s AM documentation. The following figure illustrates the planned evolution of the decision making approach in the City’s AM system:

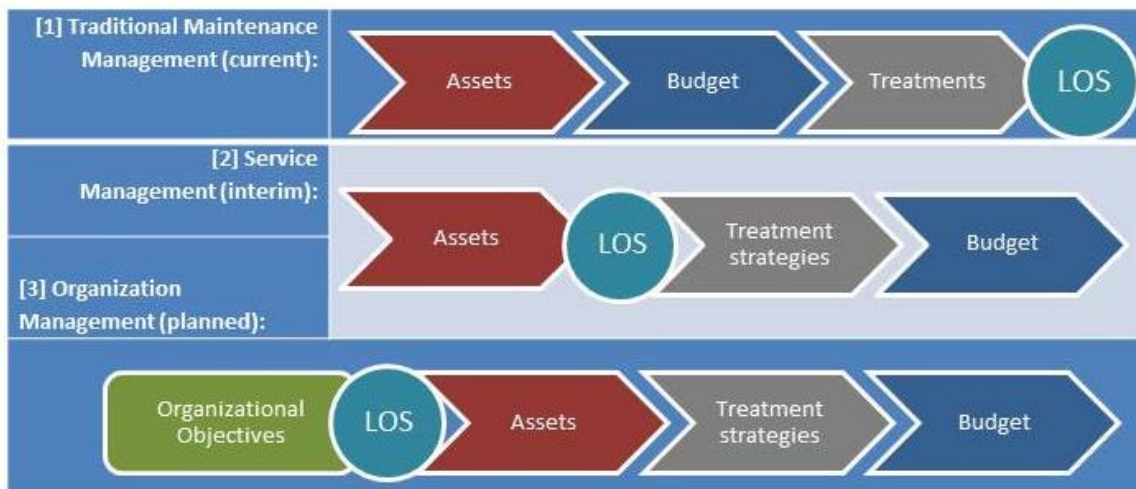


Figure 5 - AM Decision Making Maturity Progression

8.2. Current Decision Making Process

The City’s process for asset management decision making is shown in the following diagram:

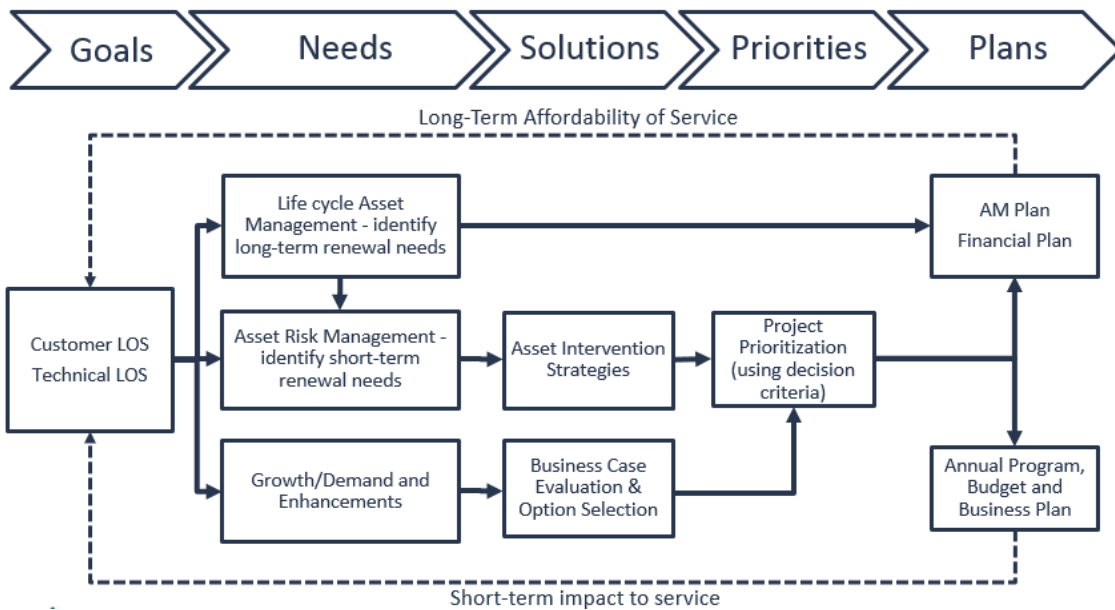


Figure 6 - AM Decision Making Process

The City’s current decision making process uses simple decision criteria to prioritize investment decisions. Currently the City has no formal overall defined method to compare the priority of different recommendations/requests coming from different service areas. However, this is done informally through the annual budget process using the following criteria:

Table 3- Simple Decision Criteria

Maintenance Programs	Capital Renewal Programs	Capital New & Improvement Programs	New Programs & Services
<ol style="list-style-type: none"> 1. Service continuance & risk 2. Existing contract commitments 3. Asset condition 4. Lifecycle maintenance strategies 5. Co-ordination with others 	<ol style="list-style-type: none"> 1. Public safety risk 2. LoS performance 3. Operating cost & efficiency 4. Critical resilience & asset related risks 5. Proactive renewal targets 6. Adoption of a sustainable approach 7. Co-ordination with others 	<ol style="list-style-type: none"> 1. Legislative requirements 2. Committed / Phased projects 3. Serious threat to Public Health and Safety 4. Existing service gaps 5. Alignment to Council’s strategic direction 6. Growth related projects 	<ol style="list-style-type: none"> 1. Legislative requirement; 2. Growth adjustments; 3. Cost savings or inherent efficiencies; 4. Identified need with self-sustaining revenues available; 5. Identified need with no corresponding revenue possibilities.

Changing priorities and focus are a reality of long-term planning in a municipal environment. Some rebalancing and reacting to changing demands and to successes or failures of existing

plans may be required during each Council cycle. Despite this changing environment, some cornerstone priorities will remain unchanged. Council and City staff will always consider the following priorities in the decision making process:

1. Public Safety

This is the highest priority to be considered in the decision making process. That said, it must be recognized that public safety considerations range from “real and imminent” to “potential risks” and the proper balance between the two must be maintained.

2. Managing the Assets We Have

The City has a commitment to operate and maintain its current assets. To ensure efficiency in this area it is necessary to confirm that assets are still required and that existing service levels are appropriate. This information typically occurs as part of asset management plan (AMP) updates, on a 3-5 year cycle. Replacement and disposal processes must consider both public safety and cost. Information management, monitoring and AM improvement planning projects are an important part of asset operations and ensure that proper decision-making information is available.

3. Improvements to Assets and Services

Capital improvement projects must be justified and supported by service outcomes and approved strategies, plans or Council resolutions. Growth-justified capital works projects must be separately identified from the other new capital works, and must be related to development. Full cost estimates (initial capital costs and forecast changes to operational, maintenance and renewal expenditures) must be available to decision makers. In addition to improving and adding assets, decision makers must also manage decline. Should the need for a service decline, supporting assets will be reviewed and adjusted according to new and future service needs. If an asset (or asset group) is no longer needed, disposal options (e.g. remove/destroy, abandon, stabilize, sell) must be considered based on the best outcome for the community.

8.3.Developing the Decision-Making Process

As the City’s AM system matures, so too will the decision-making process. The following factors will influence how service delivery programs are developed and will also influence the decision-making processes and decision criteria:

1. Council’s long-term vision and key objectives for each term.
2. Organizational strategies and plans that are developed to deliver upon Council and Organizational objectives will define actions and projects. Many of these strategies and plans will last well beyond one election cycle (long-term).

3. The City's financial strategy, which will set principles that direct how programs and projects will be funded (funding source and limits).
4. Stakeholder needs and affordability constraints.

8.4. Documents to Support Decision Making

To assist in AM decision making, asset management plans (AMPs) will play a key role in tying existing data, strategies, plans and goals into cohesive and specific plans. The City's AM plans will identify planned long-term infrastructure investment and funding strategies.

In preparing AMPs, other longer-term strategic documents such as the Integrated Community Sustainability Plan and the Official Community Plan will be consulted for alignment. These longer-term strategic documents incorporate items such as population growth as well as Council's strategic direction. Document alignment ensures that, when fully developed, AMPs will be able to better inform future versions of the longer-term plans.

The processes of preparing new strategic documents and updating existing documents will be integrated with AMPs. The AMPs will inform the strategic planning process and vice versa. Each version of an AMP will respond to decisions made in previous strategic plans as well as to the changing service environment, allowing each service area to be proactive and agile in responding to forecast change.

The City's 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. Analysis and reporting to support decision making must be robust, unbiased and clearly understood by all users. Appropriate and consistent approaches (e.g. Triple Bottom Line Benefit Cost Analysis, Lifecycle Cost Analysis, and Discounted Cash-flow) will be applied as appropriate to the nature of the decision.

9.0 ASSET MANAGEMENT OBJECTIVES & PERFORMANCE TARGETS

One of the fundamental components of asset management (AM) is that it “translates the organizational objectives into technical and financial decisions, plans and activities” (ISO 55000). Thus, the City’s AM objectives are aligned with and support organizational objectives and priorities. Asset management objectives direct the development of the AM system, align with the strategies and plans for each service area and guide the allocation of AM resources.

9.1. Organizational Objectives

The British Columbia Community Charter (Bill 14, 2003) is local government legislation that establishes principles for municipal-provincial relations, describes fundamental municipal powers and accountability. Part two of the Charter describes four core purposes of a municipality as follows:

1. Provide good government for the community.
2. Provide for services, laws and other matters for community benefit.
3. Provide for stewardship of the public assets of the community.
4. Foster the economic, social and environmental well-being of the community.

At a high level, these four principles provide core objectives for the City. In addition to these core objectives, the City’s values, goals and aspirations are expressed in a number of documents, statements and policies, each with a unique perspective.

The City’s *Vision Statement*, affirmed in 2009, describes the type of community Revelstoke aspires to be as follows:

Revelstoke will be a leader in achieving a sustainable community by balancing environmental, social and economic values within a local, regional and global context. Building on its rich heritage and natural beauty, this historic mountain community will pursue quality and excellence.

Revelstoke will be seen as vibrant, healthy, clean, hospitable, resilient and forward thinking. It will be committed to exercising its rights with respect to decisions affecting the North Columbia Mountain Region. Community priorities include:

- opportunities for youth
- *economic growth and stability*
- *environmental citizenship*
- personal safety and security
- a responsible and caring social support system
- a first-class education system
- local access to life-long learning
- spiritual and cultural values
- Diverse forms of recreation.

All residents and visitors shall have access to the opportunities afforded by this community.

The City's 2016 *Mission Statement* refines the ideas presented in the *Vision Statement*.

Our mission is to *provide optimum quality services and security to our community and our visitors, in a fiscally responsible manner.*

We will endeavor to provide cooperative, well-informed and innovative leadership in order to sustain our uniquely superior quality of life.

We are committed to fostering a strong sense of community in Revelstoke, and we will be responsive and adaptive to changing social, political and economic conditions.

Values expressed in the City's *Vision and Mission Statements* are interpreted within the *Revelstoke Sustainability Framework* (contained in the 2013 *Integrated Community Sustainability Plan*) which provides direction and emphasis for each service area under the integrated strategic themes of Healthy Ecosystems & Linked Open Spaces, Strong Community Capacity, Compact and Connected Communities, Resilient Infrastructure, Responsive and Caring Social Systems, Vibrant Culture, and Dynamic Local Economic Development.



Figure 7 - Revelstoke Sustainability Framework

The City's recent *Public Participation Policy* (A-23, 2016), describes the City's commitment to undertaking public participation on issues that affect citizens and their community and states,

The City is committed to: transparent and inclusive processes that are supported by adequate information; are inclusive and considerate of the diversity of Revelstoke and its citizens; appropriate to the decision or issue at hand; are within the City's ability to finance and resource.

9.2. Establishing the Asset Management Objectives

Asset management objectives relate to current organizational objectives and values and will change over time as priorities of the organization and community change. They are not an exhaustive measure of the AM system performance. To ensure AM objectives continue to meet organizational objectives, the City will continually monitor achievement of the AM objectives and performance of the AM system. The City's AM policy provides details on the guiding principles and desired outcomes of a successfully implemented AM system.

Detailed objectives in relation to the performance of individual assets and services will be described in the level of service (LoS) sections of service area asset management plans (AMPs).

9.3. Asset Management Objectives



The City's AM objectives are guided by organizational objectives, the AM policy and best practices and principles in AM. As the City's formal AM system is still in its infancy, the current AM objectives relate to three core objectives described in the City's Vision and Mission Statements. As the City's AM system matures, AM objectives will be revised and expanded. The AM objectives drive all AM practices, including improvement initiatives, undertaken by the City.

The following table describes the City's current AM objectives and the supporting organizational:

Table 4- Asset Management Objectives

Asset Management Objectives	Organizational Objectives
1. Ensure that asset information is incorporated into the City's decision making processes.	<ul style="list-style-type: none"> • Economic Growth and Stability • Environmental Citizenship
2. Base the long-term financial plan on sustainable levels of service.	

Asset Management Objectives	Organizational Objectives
3. Consider financial and environmental sustainability in all asset management plans and other governance documents.	<ul style="list-style-type: none"> • Provide optimum quality services and security to the community and its visitors in a fiscally responsible manner.
4. Provide training, support and resources to City staff to ensure proper development and maintenance of the AM system.	

9.4. Achieving the Asset Management Objectives

An important step in translating the objectives and goals of the City’s AM system into specific tasks and actions is the creation of asset management plans (AMPs). Asset management plans will provide the greatest level of detail and description of the City’s service areas.

The senior management team (Department Directors and Managers) are responsible for establishing and maintaining service area asset management plans (AMPs) based on S.M.A.R.T.E.R. principles (i.e. specific, measurable, achievable, realistic, time-bound, economic, and resourced). Asset management plans will establish the following specific goals:

- a) detailed levels of service linked to achievement of the AM objectives
- b) methods and criteria for decision making and prioritizing allocation of resources
- c) planning horizons, processes and strategies for identifying performance gaps and managing assets over their entire lifecycle
- d) activities, timescales and resources required to provide the service and manage risk
- e) financial and non-financial implications of the plan, including actions to address risks and opportunities associated with managing assets and resources for delivery of the service
- f) responsibilities for planning, risk management, decision making and delivery
- g) describe how outcomes of the plan will be evaluated



The City is working to complete individual and service area AMPs for all service areas. Once AMPs are completed, the review period for the AMPs will be a maximum of three years. In the future, the City may consider creating asset and service masterplans to improve long-term planning and integration of assets.

Overall performance of the AM system will be regularly assessed against both the AM objectives and broader standards for international best practices in asset management. Results will be reported in the City’s annual report.

9.5.Reviewing the Asset Management Objectives

As the City's AM system matures, AM objectives will be reviewed and refined. To monitor the effectiveness of the AM objectives, 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 three years with key stakeholders to review the current AM objectives and service standards.

9.6.Communicating the AM Policy and AM Objectives

External communication to stakeholders of the AM policy and AM objectives will be undertaken through the publishing of the AM policy and SAMP on the City's website.

Internal communication of the AM policy, AM objectives and other AM activities will be primarily undertaken through

- AM related meetings, workshops, training sessions and conferences, and
- Development of the annual work programs.

10.0 ASSET MANAGEMENT PROCESSES AND PRACTICES

10.1. Framework

Understanding and applying core practices and processes within the City’s asset management (AM) system will assist staff in the efficient and effective management of assets and delivery of services. Several process and practice models exist which offer an excellent foundation for the City’s AM system. The development, implementation and improvement of AM practices and the documentation of associated processes are ongoing activities. The AM steering committee is responsible for developing guidance that facilitates a consistent approach for these processes and practices across the organization.

The City currently uses the Asset Management BC (AMBC) Framework for Sustainable Service Delivery as the basic structure for its AM system:



Figure 8 - BC Framework for Sustainable Service Delivery

The following table provides a description of core processes and practices within the AM system that support each step of the AMBC Framework shown in Figure 8. Appendix C contains detailed information about the core enablers (finances, people, assets and information) and guiding principles of AM and sustainable service delivery also represented in the Framework.

Table 5- Core AM System Processes and Practices

Core Process / Practice	Scope / Intended Outcome	References
Framework Reference: ASSESS		
AM Maturity Assessment	Assessment of the AM system and improvement areas.	SAMP
State of Infrastructure	Document the inventory, asset condition/performance, and value of assets. This assessment is the foundation for the development of AMPs.	AMPs
Information Management	Define which data on assets and AM practices need be recorded, the process for recording it, and where it is recorded. This includes asset condition, utilization, and performance	AMPs
Framework Reference: PLAN		
Plan and document the AM system	Document the City's commitment to AM, overarching AM principles, AM governance structure; document AM objectives and the role of the AM system in supporting those objectives.	AM Policy / SAMP
Levels of Service (LOS)	Define Levels of Service measures at the corporate level, at the customer level, and at the asset level. Set targets and track performance against targets.	AMPs
Long Term Financial Planning	Develop plan for meeting future demand and infrastructure needs.	Financial Plan
Asset Lifecycle planning	Develop life-cycle models to forecast long-term investment needs based on asset lifecycle management strategies.	AMPs
Risk Management	Use risk to develop short-term (1 to 3 year) investment needs to maintain and deliver target levels of service; empower service areas to plan actions to prevent or reduce undesired effects.	AMPs
Demand forecasting & Management	Forecast and plan for meeting future growth and demand, including capital, operating and non-asset solutions.	AMPs (possibly AM Master Plans)
Investment Planning	Apply the LOS, Risk, and Demand Forecasting processes to develop 10 year capital / operating plans.	Capital/ Operating Plans
Framework Reference: IMPLEMENT		
Implement AM work programs	Implement programs of work contained in planning documents.	SAMP / AMPs
Performance reviews & reporting	Continuous improvement in the effectiveness and efficiency of the AM system and service delivery.	Annual & Financial Reports

10.2. Tools

The City’s AM system includes all software applications, templates, and analysis tools used to support asset planning, delivery, monitoring and improvement. Asset management tools used across all departments are managed by the AM Steering Committee, but other specific tools in use are managed by the service area asset managers (SAMs) for the respective service areas. Tools will vary according to need and may be updated and changed as new technology becomes available or the City’s needs change over time.

A high level description of the City’s core AM tools is provided in the following table:

Table 6- Core AM System Tools

Tool	Purpose
Information Management	
GIS	Used to track spatial information for assets to create maps both for display and reporting.
Assetfinda	Used in combination with GIS and financial data to track spatial and non-spatial asset data (not fully implemented).
AutoCAD	Used to document infrastructure design and as-built information.
SCADA systems	Supervisory control and data acquisition systems that continually monitor equipment or systems and send information to a remote computer or alarm system.
Capital Infrastructure Planning	
Assetfinda	Used in combination with GIS and financial data to track spatial and non-spatial asset data; asset and financial report generating capabilities (not fully implemented).
Envision Rating System	A sustainable infrastructure rating system that helps assess sustainability in project design, construction and operation. The Envision rating system is a tool used for some project option selection.
Financial Management and Budgeting	
Diamond	Maintains customer billing information for utility and taxation purposes.
Excel	Used to manage City budgets, meet PSAB reporting requirements – currently in use with the intention to move financial reporting to Assetfinda.
Infrastructure Delivery	
Excel / Word	To track and report on project execution. Outputs are project documents and reports (e.g. project schedule, status reports, change requests, etc.).
Assetfinda	Used in combination with GIS and financial data to track spatial and non-spatial asset data; work tracking and planning capabilities (not fully implemented).

11.0 ASSET MANAGEMENT ROLES AND RESPONSIBILITIES

11.1. Asset Management Policy

The City's current asset management (AM) policy (PW 15) establishes responsible governance roles and accountability for AM. Section 11.3 of this SAMP provides a complete description of governance roles and responsibilities in the City's AM system.

As described in the AM policy, the Chief Administrative Officer (CAO) is accountable for the implementation of the AM system and is directed to

- a) Establish an AM Steering Committee with cross-functional representatives from relevant business areas across the organization.
- b) Appoint an AM Coordinator (AMC) to serve as chair of the AM Steering Committee, oversee and report on the implementation of the AM system and act as an advocate for AM within the organization.

11.2. Governance of the Asset Management System

The Governance Structure is the means by which the City

- a) Guides managers in the implementation and application of the AM system,
- b) Maintains oversight and control of implementation and improvement of the AM system,
- c) Measures the ongoing contribution of the AM system to the municipality's goals and adjusts content and direction if necessary, and
- d) Refines the definition of success to maintain alignment with evolving corporate strategy.

The governance structure for the AM system is illustrated in the figure below and the roles and responsibilities are documented in the next section. Roles and responsibilities for AM (organizing and directing resources to plan and deliver services) and operations (doing the work) are described in the relevant AMPs. A complete organizational structure diagram is included in Appendix D.

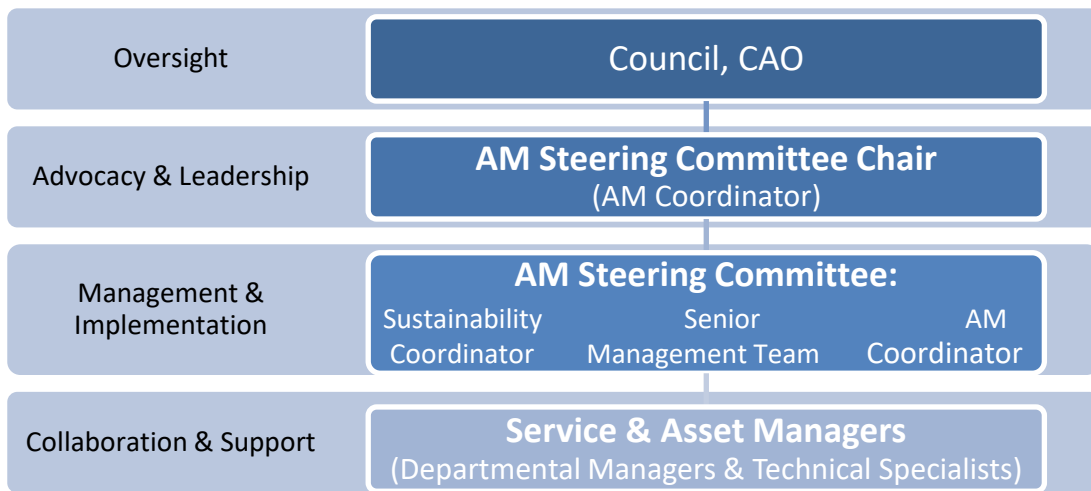


Figure 9 - City of Revelstoke's Asset Management Governance Structure

11.3. AM Governance Structure Roles and Responsibilities

The following sections describe the roles and responsibilities that are assigned within the AM governance structure.

11.3.1. Council

Council's role is to

- a) Act on behalf of and represent the interests of stakeholders.
- b) Establish the vision, service mandates & corporate management policies.
- c) Adopt, review and update the AM policy and ensure a SAMP is in place.
- d) Maintain the necessary corporate capacity to support the elements and practices of an AM system.
- e) Set priorities and articulate community values to City administration.

11.3.2. Chief Administrative Officer (CAO)

The CAO's role is to

- a) Act on behalf of and represent the interests of Council.
- b) Provide direction to the AM Steering Committee.

The CAO's responsibilities are to

- a) Implement the AM Policy, SAMP and supporting AM system.
- b) Establish an AM Steering Committee with representation from each service area and business area; appoint an Asset Management Coordinator (AMC) to serve as Chair of the Committee.
- c) Define the AMC's responsibilities, and delegate responsibility to the AMC to act as a champion for AM within the organization.

- d) Ensure that adequate resources are available for the AM program implementation and overall AM program development.
- e) Commit to the implementation and continuous improvement of AM practices, processes and tools to support the achievement of the City's organizational objectives.
- f) Schedule and complete periodic internal audits and management reviews to assess the effectiveness of the AM system to achieve AM objectives and support organizational objectives and Council priorities.

11.3.3. AM Steering Committee

The AM Steering Committee's role is to

- a) Act on behalf of and represent the interests of the organization.
- b) Provide direction to service and asset managers.

The AM Steering Committee's responsibilities are to

- a) Lead and manage the development, implementation and continuous improvement of AM practices and systems within the organization.
- b) Oversee decision making, stakeholder management, risk management, and issue resolution relating to the AM system and implementation tasks.
- c) Implement corporate-level AM initiatives to support evidence-based decision-making at Council level, senior management, tactical and operational levels within the organization.
- d) Coordinate and oversee business-level AM initiatives where integration across business units or service areas is desired, or where a standardized approach is required.
- e) Recommend and manage the content of the AM policy, and SAMP, including the AM framework.
- f) Take any appropriate action necessary to ensure the smooth integration within/between AM system implementation and improvement projects.
- g) Advocate for AM within the organization, leading by example and setting expectations within teams.
- h) Provide support and direction for AM practices at the department level.
- i) Direct and coordinate the implementation of AM tools and technologies in the organization.
- j) Support development of AM capacity and competency within the organization (i.e. increase the ability to do this work in-house).
- k) Monitor progress/performance of the plans for AM program development & implementation, including line-of-sight between corporate and AM objectives.
- l) Conduct management reviews and internal audits of the AM system, including but not limited to:

- i. Monitoring and reporting on AM program development & implementation,
- ii. Monitoring achievement of the AM objectives (outcomes of the AM system) and contribution towards achievement of the overall corporate objectives,
- iii. Developing, managing, implementing and monitoring AM improvement plans, including development of improvement project prioritization criteria and weightings and
- iv. Tracking, analyzing and reporting on the benefits of the AM system.

11.3.4. AM Coordinator (AMC)

The AMC's role is to lead and coordinate AM initiatives within the organization. The AMC's responsibilities are to

- a) Chair the Steering Committee.
- b) Monitor and regularly report to the CAO on risk, resource requirements and corporate-wide progress in implementing the AM policy, and improving AM practices within the organization.
- c) Define, document and implement the Terms of Reference for the AM Steering Committee subject to their approval by the CAO.
- d) Advocate for AM within the organization, Council and with stakeholders.
- e) Project-manage AM system improvement initiatives within the City.

11.3.5. Senior Management Team

The City of Revelstoke's Senior Management Team, shown in Figure 10 below, consists of the department directors under the leadership of the CAO.

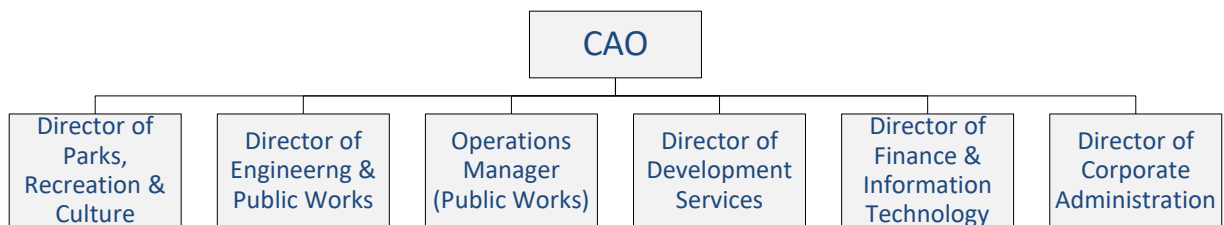


Figure 10 - Revelstoke's Senior Management Team

The Senior Management Team works collectively to

- a) Provide appropriate and timely support to the AMC and steering committee.
- b) Advise the AMC and AM Steering Committee on strategic issues related to corporate decision making.
- c) Generate solutions to organizational challenges related to the implementation of AM.
- d) Ensure consistency of AM practices and processes across the departments, including adoption and application of common principles of sustainability and AM.

- e) Provide direction on corporate-wide projects and initiatives.
- f) Empower employees through the City's core values and setting of priorities.

11.3.6. Sustainability Coordinator

The Sustainability Coordinator is a member of the AM Steering Committee and provides advice on the City's existing and planned sustainability initiatives and obligations. The Sustainability Coordinator will work with the AMC to incorporating sustainability into the AM system and improvement projects.

12.0 STRATEGIC ASSET MANAGEMENT PLAN RISK/OPPORTUNITIES

The focus of the City's risk management strategy will be on early identification and communication of issues, understanding risk and agreeing on the best strategy for managing risks in the implementation of the asset management (AM) system. Risk is analysed by assessing the likelihood and consequence of occurrence.

Rating	Consequence	Likelihood
HIGH	Realization of the risk will lead to unacceptable outcomes for one or more stakeholders. Stakeholders will be reluctant to work together in the future.	It is almost certain this risk will occur during the next 5 years and must be planned for.
MED.	Realization of the risk will lead to undesirable but tolerable outcomes for one or more stakeholders.	It is reasonable to expect that this risk will occur during the next 5 years and should be planned for.
LOW	Realization of the risk will impact the project objectives, but is deemed acceptable by the project management team and steering committee.	It is unlikely this event will occur (chance is less than 1 in 5).

A summary of the main risks we foresee in implementation of the AM System and our plans for mitigating them are as follows:

Event	Mitigation Measure	Consequence	Likelihood	Risk	Owner	Timescale*
AM processes and tools do not meet stakeholder needs & expectations	Review processes and tools and improve if needed; increase training and support	H	L	M	Service or Asset Manager with support of AMC	S
AM system does not achieve the intended outcomes	Review and update processes	H	L	M	AM Steering Committee	S/ M
City staff are not able to contribute effectively due to lack of AM understanding and alignment	Increase communication and training	M	L	L	Service or Asset Managers with support of AM Steering Committee and AMC	S
Program timescales and workloads of staff put pressure on AM development projects	Review priorities and adjust if needed; delegate tasks to other staff or increase staff if necessary and possible	M	H	H	AM Steering Committee, Council	M
Technical difficulties lead to lack of progress on core initiatives	Provide in-house training or obtain external technical assistance	H	L	M	Service or Asset Managers, AM Steering Committee	S

Event	Mitigation Measure	Consequence	Likelihood	Risk	Owner	Timescale*
Stakeholder engagement and consultation is ineffective and does not reach the required audience.	Improve communication, create and follow an engagement strategy, obtain external expertise	M	L	L	AM Steering Committee, Corporate Administration Department	M

*Timescale: Short (S) = 0-3 years, Medium (M) = 3-5 years, Long (L) = 5-10 years

13.0 MONITORING, REVIEW, CONTINUAL IMPROVEMENT & INNOVATION

13.1. Continual Improvement

Continual improvement is a key component of asset management (AM). 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 must be applied to multiple elements of the AM system including documentation.

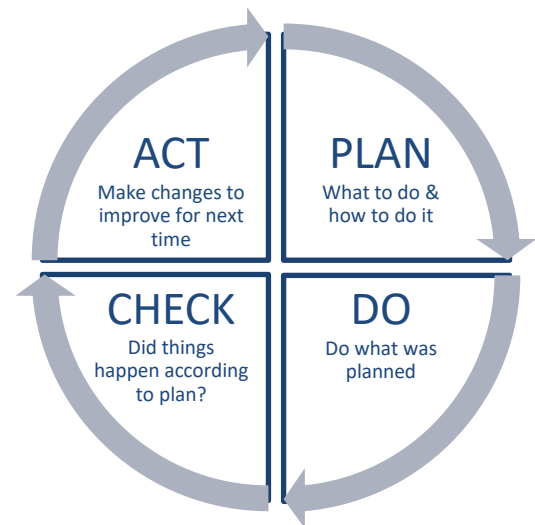


Figure 11 - Deming Cycle for Continuous Improvement

13.2. Management Reviews

The CAO and asset management coordinator (AMC) are accountable for continual improvement of the AM system. The AM Steering Committee is responsible for completing regular AM performance reviews to prove achievement of corporate and AM objectives, and for ensuring sustainability of continued achievement of the AM objectives. The AM Steering Committee 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 AM policy and this strategic asset management plan (SAMP), will be completed at least once every five (5) 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 and progress on improvement action plans
- opportunities for continual improvement
- changes in the profile of risks and opportunities
- competency, skills, resources and support
- asset performance and condition

The outputs from the reviews should include decisions and actions relating to improvements in AM system and activity 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 and performance reporting are documented and relevant information is communicated to specific employees and stakeholders.

13.3. 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.

13.4. Monitoring & Review of the Asset Management Strategy

The CAO is accountable for continual improvement of the strategic asset management plan (SAMP) and the AM objectives.

13.5. Improvement Plan for the Asset Management System

The necessary changes and/or corrective actions identified from the management reviews and performance reporting may be included in a formal Continuous Improvement Plan for AM.

The following table lists the areas for development and improvement that have been identified in this SAMP.

Table 7- Development and Improvement Areas



Area requiring development or improvement	SAMP section reference	Action required
Long Term Financial Plan	Section 4, 9	A long term financial plan (10-20 year horizon) must be developed.
State of Infrastructure and Achievement Reports	Section 4	State of Infrastructure and Achievement Reports for AM need to be developed and executed at an agreed frequency. External reporting is currently done in the Annual Report and will continue. State of Infrastructure and Achievement Reports can be an internal reporting process to inform management decisions.



Area requiring development or improvement	SAMP section reference	Action required
Corporate document updates	Section 5	Integration of AM objectives through the City's lines of business is an ongoing task. One component of this task is the incorporation of AM objectives into corporate documents as they are revised.
Formalize corporate management practices	Section 5	The City's Risk Management and Performance Management practices are not yet formalized.
External stakeholder engagement	Section 6	The City doesn't have a formal process for engaging with external stakeholders. The engagement process will be different for each stakeholder group.
Establishing Levels of Service (LoS) and external stakeholder engagement	Section 6, 9	Develop a Level of Service framework. Levels of service must be established for all asset-based service areas. Part of this process may involve external stakeholder engagement and consultation.
Business context	Section 7	Complete a formal assessment and understanding of the City's business context as it relates to AM and use this to inform the prioritization of improvement actions.
Formal decision making tools	Section 8	Decision-making processes, tools and criteria need to be continuously developed and improved as the AM system matures.
AM Objectives	Section 9	AM objectives will be revised and new objectives will be added as the City's level of AM maturity increases.
Asset Management Plans	Section 9	Asset Management Plans must be developed for all service areas. The City may consider creating Asset and Service Area Masterplans as the AM system matures to improve long-term planning and asset integration.

14.0 SUPPORTING REFERENCES AND RESOURCES

14.1. References

Please note that some of the items listed below may not be publicly available.

References to related corporate-wide procedures, forms and resources

- City of Revelstoke's 2015/16 Strategic Plan
- Integrated Community Sustainability Plan (2013)

References to related Council policies, bylaws and administration policies

- Revelstoke's AM Policy, (PW-15), (2016)
- Capital Asset Policy (F-10), (2008)

Other references and resources

- ISO 55000, 5001, 5002 Standards, (2014)
- International Infrastructure Management Manual (2015)

15.0 REVISION HISTORY

Revision Date	Description
Nov-2016	Draft Strategy – Steering Committee Review
April 2017	Incorporation of comments from March 16 th Workshop with Revelstoke Senior Management and alignment review by CH2M/Opus.
May 2017	Incorporation of comments from May 4 th Workshop with Revelstoke Senior Management and Matthew Rodwell (Opus).

Appendix A
Risk Factors and Ratings

Revelstoke Risk Factors

Risk Factor	Risk	Possible Impacts	Priority
Strategic Priorities / Legislative or Policy Changes	Infrastructure deficit - short and long term	Service reductions and increased costs	M
	Legalization of pot	Increased bylaw and law enforcement costs	L
	Failure to safeguard infrastructure	Service reductions and increased costs	H
Resilience / Climate Change and Environmental Pressures	Surface water (watershed) - quantity and quality	Service reductions and increased costs, restrictions on development	M
	Storm frequency and intensity	Damage to property and infrastructure, increased costs	M
	Installation of unit 6 at Revelstoke Dam (5km upstream)	Changes to river flows, impacts to recreational uses of river and reservoir	M
	Changes to snow line at ski hill and globally (more visitors or fewer?)	Increased (or reduced) demand for services at peak times (LoS changes)	L
	Increased risk of forest fire	Damage to property and infrastructure, negative impact on tourism-based businesses	L
Demographic / Land Use Changes	Demand for recreational properties	Increased demand on infrastructure, increased costs if not properly funded through DCCs	H
	Poor land use planning	Increased conflict between neighbours, reduced quality of life, lost tax revenue	M
	"Sprawl" (Revelstoke scale)	Increased costs to provide services, increase in cars, reduced quality of life	M
	Lack of land for future ICI development	Limited tax revenues, reduced quality of life (services not available in town)	L
	Demographic shift (industrial to recreation-based) - changing expectations	Higher demands on certain services, increased costs	M
Economic Changes and Resource Availability	Ability to pay increased taxes (cost of living high)	Service reductions if revenue cannot be generated	L
	Higher material/service costs in certain areas	Increased maintenance and project costs	L

Analysis of City-wide risks indicates that AM practice should be at the Core level, with extension of practice to an Intermediate level around managing the effects of climate and land use changes.

Service Area Risk Rating

Service	Legal / Regulatory Req.	Asset Cond. & Complexity	Failure Risks & Service Criticality	City Skills & Resources	Customer Expectations	Sustainability of Service
Transportation	L	M	M	L	M	M
Water Treatment & Supply	M	M	M	L	M	M
Sewage Collection, Treatment & Disposal	M	M	M	L	M	H
Stormwater Management	L	L	L	L	M	M
Flood Management	L	L	M	L	M	M
Solid Waste Management	L	L	L	L	M	M
Parks & Rec.	L	L	L	L	M	M
Civic Buildings & Facilities	L	L	L	L	L	M
Protection Services	L	L	L	L	M	M
IT	L	L	L	L	L	L
Fleet & Heavy Equipment	L	L	L	L	L	M

Key:

- Low risk
- Medium risk
- High risk

Analysis of the factors above suggests that the City should focus on achieving a Core practice level in its AM system and should strive to achieve an Intermediate practice level for levels of service (LOS) and processes for sustainable service delivery.

Appendix B

Asset Management Maturity Matrix

Appendix C
Asset Management Framework Details

Core Elements (Enablers) of Asset Management

There are four core elements of the AMBC Framework that are necessary for sustainable service delivery:

- 1) **People:** The City's business process for preparing asset management plans (AMPs) engages a broad cross section of staff to ensure that a diverse range of appropriate skills and knowledge are applied in the delivery of AM. This brings different perspectives and approaches to overcoming problems and obstacles in the preparation and delivery of the AMPs. Asset management roles and responsibilities are clearly defined at both the corporate and departmental level (refer to Section 11) to establish the accountability for the management of the AM system and the delivery of infrastructure services.
- 2) **Assets:** The spectrum of assets included in an asset portfolio is broad, and the AM system accommodates all asset groups. Service and asset managers (SAMs) are responsible for cataloging and classifying the assets for which they are responsible.
- 3) **Information:** The data and metadata required for each asset type is described in the AMPs. The City avoids unnecessary work and reinforces the importance of the data that is collected by only collecting data that is actively used in decision making. Asset Management Plans include a clearly defined plan for data collection to ensure that is current and continuously improved to support practices such as identifying critical assets and prioritizing work.
- 4) **Finances:** The AMPs provide a holistic understanding of the lifecycle costs of providing services. Proactive and long term financial planning based on an accurate assessment of need will yield fewer service disruptions, more predictable results and lower total lifecycle costs than a reactive approach to repair and replacement.



Guiding Principles of Asset Management

The International Organization of Standardization (ISO) has established several fundamental AM principles (ISO 55001) that the City has also adopted into their AM system. Applying these AM principles throughout the system and in development of the AMPs in particular will help the City ensure that maximum value is realized from its assets:

- **Value:** The City's assets exist to provide value to the organization and its stakeholders.
- **Assurance:** Asset management gives assurance that assets will be available and will fulfil their required purpose in the present and into the future.
- **Alignment:** Asset management is a method that translates the organizational objectives into technical and financial decisions, plans and activities.
- **Leadership:** Leadership and workplace culture are critical to the success of the AM System.

The following key AM principles will also be considered and applied across all aspects of the City's AM system:

- **Holistic:** Asset management is a comprehensive approach that looks at the "big picture" (i.e. the combined implications of managing all components rather than a compartmentalized approach). This includes the functional interdependencies and contributions of assets within asset systems and the different approaches needed to manage assets across all lifecycle phases.
- **Systematic:** Asset management is a methodical approach (i.e. formal, repeatable and consistent).
- **Systemic:** Asset investment decisions should be made in an asset system context, not just optimized for individual assets.
- **Risk-based:** Risk associated with attaining target levels of service is managed by ensuring that resources, expenditures and priorities are assigned based on risk and associated costs/benefits.
- **Optimal:** The best asset investment decisions are made by evaluating all options and considering trade-offs between the competing factors of service level benefits (including asset performance), risk and cost over an asset's full lifecycle.
- **Sustainable:** The approach to service delivery is financially achievable over the long-term, is not wasteful of resources, minimizes or reverses environmental damage, and continuously improves social and inter-generational equality. The approach for estimating asset investment need and developing AM strategies is based on achieving triple-bottom-line outcomes over the long term, and considers the full lifecycle of assets.



- **Integrated:** All of the above principles are coordinated to ensure the delivery of justified services with well-defined outcomes.
- **Aligned:** The AM system complements and contributes to the achievement of the organizational objectives as well as complying with relevant legislation and regulations.



Guiding Principles of Sustainable Service Delivery

Sustainability is a broad concept that encompasses many disciplines and involves the entire organization. The term sustainability, as used in the context of the AM system, means applying sound environmental, social and economic principles that take into account present and future needs of users. This includes consideration of both asset and non-asset based solutions to deliver services as well as the ability and willingness of the community to pay for services on both a short and long-term time horizon.

To guide City staff, the following statements of principle have been developed using themes from the City's Vision, and objectives. They are to be embedded throughout the City's AM system as appropriate:

a) Sustainable service delivery is about balancing or harmonizing social, environmental and economic interests. A sustainable society depends upon the achievement of multiple interconnected conditions, not isolated priorities. In order to contribute to sustainable development, a municipality should satisfy all 'three pillars' of sustainability: social, environment and economy.

b) Sustainable service delivery is about both short-term and long-term orientation. A sustainable community should consider both the short-term and long-term consequences of their actions and not just focus on short-term gains. This approach brings attention to the full life cycle of assets and encourages inter-generational equity of costs and benefits.

c) Sustainable service delivery is about resilience and adaptability. Sustainability in AM is most commonly considered to refer to sustainability of services that is driven by service demand and resource capacity (financial, capability, materials etc.). This must be achieved within the context of long-term changes in the local operating environment. Changing economic, social, technological, environmental, and climate conditions all require significant adaptation to infrastructure and overall AM over time. The resilience of an infrastructure system refers to its ability to maintain and recover functionality in the face of stresses, shocks, and change, whether these can be anticipated or not. Resilient systems are flexible and adaptable to change and uncertainty, robust and designed to anticipate potential failures, inclusive all cultures and in favour of social acceptance, and integrated with other societal systems to support the achievement of common outcomes.

d) Sustainable service delivery is about local and global orientation. Intentionally or not, the prosperity of the City is influenced by local and international stakeholders (competitors, suppliers, customers, residents etc.). The actions of the City therefore have an economic, social and environmental effect, both locally and globally. Sustainable service delivery has to consider inputs ranging from global to regional and local.

e) Sustainable service delivery is about values and ethics. Sustainable development reflects the values and ethics of a society. The changes needed for more sustainable development will reflect the implicit or explicit values that we as professionals, business leaders or consumers hold and express in our behavior.

f) Sustainable service delivery is about transparency and accountability. A transparent organization is open about its policies, decision and actions. The City must provide timely, clear and relevant information to stakeholders so that stakeholders can evaluate the City's actions and can address potential concerns quickly. An accountable organization is responsible for its policies, decisions and actions and their effect on the environment and society. This includes administration accepting this responsibility and being willing to be held accountable.

g) Sustainable service delivery is about stakeholder participation and collective action. Considering and respecting the potential interests of stakeholders is key to sustainability as is working together across the community to realize common goals. Our culture is built on the values that we share and the ways we come to terms with our differences.

Stakeholder participation requires us to acknowledge and respond to the cultural diversity in our community and to engage stakeholders as individuals and partners. The City and stakeholders must work together to define problems, design solutions, collaborate to implement solutions, and then monitor, evaluate, and be accountable for the outcomes.

h) Sustainable service delivery is about risk reduction. The precautionary principle is based on the understanding that in an environmentally-conscious society, it is more efficient to prevent damage than it is to mitigate it.

i) Sustainable service delivery is about eliminating waste. Waste is commonly defined as over-production, waiting, transporting, over-processing, unnecessary inventory, unnecessary or excess motion, defects and skills (e.g. Lean Six Sigma and the Toyota production system).

j) Sustainable service delivery is about willingness and ability to pay and consuming income, not capital. Sustainability implies that nature's ability to produce or generate resources or energy remains intact, as does society's ability to meet financial commitments for the infrastructure it builds. The 'source and sink' functions of the environment should

not be degraded: the extraction of renewable resources should not exceed the rate at which they are renewed, and the absorptive capacity of the environment to assimilate waste should not be exceeded. This principle may also be applied to the social and economic perspectives.

APPENDIX D: Organizational Structure

