

January 2019

ASSET MANAGEMENT STRATEGY AND ROADMAP

A five-year strategy and implementation plan to support the City in realizing its 2040 vision to be a *model for sustainable Canadian cities* through strategic improvements in asset management processes and practices



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Glossary

Asset management - an integrated and continuous process of making capital and operational decisions about assets that are informed by cost, risk, and service levels. Sustainable service delivery is the goal of asset management.

Level of service – the defined quality for a particular activity or service area against which performance can be measured. Level of service usually relates to quality, quantity, reliability, responsiveness, environmental acceptability, and cost.

Lifecycle costs – the total cost of an asset over its service life, including the initial capital cost as well as the cost of ongoing operations and maintenance, renewal, replacement, and disposal.

Sustainable service delivery – an approach to delivering services that ensures that services are provided to the community today in a way that:

- is fiscally, environmentally, and socially responsible;
- is adaptive to changing circumstances and future conditions; and
- does not compromise the ability of future generations to meet their own needs.

Executive Summary

What is Asset Management and Why Is It Important?

Infrastructure assets such as roads and sidewalks, water, drainage, and sewer infrastructure, parks and public buildings deliver important services to communities. A key challenge facing local governments throughout British Columbia is the long-term sustainability of these services. This calls for local governments to manage their assets in a way that supports sustainable service delivery.

Asset management is an integrated and continuous process of making capital and operational decisions about assets that are informed by cost, risk, and service levels. Sustainable service delivery is the goal of asset management. Sustainable service delivery is the goal of asset management.

The City's Asset Management Strategy and Roadmap

The City developed this Asset Management Strategy and Roadmap as part of its efforts to improve in asset management, in support of sustainable service delivery. The Strategy directly aligns with the City's Asset Management Policy. The purpose of the Strategy is to outline strategic improvements for how the City:

- effectively aligns corporate plans, strategies, and operations;
- makes informed and transparent decisions about asset management, including the long-term planning, financing, operation, maintenance, upgrade, renewal, replacement, and disposal of capital infrastructure assets;
- continuously improves its asset management processes and practices;
- builds resiliency to the impacts of climate change through asset management decisions; and
- engages stakeholders in asset management.

The Strategy describes where the City is currently at in terms of the assets it owns, the City's maturity in asset management processes and practices, where the City wants to be, and improvement strategies to get there. The Roadmap details the prioritized actions that the City will take to implement the improvement strategies, as well as the timeline over which the actions should be carried out.

State of the City's Assets

Figures 1 and 2 on the following pages show why it is so important to have a strategy in place for effectively managing the City's assets.

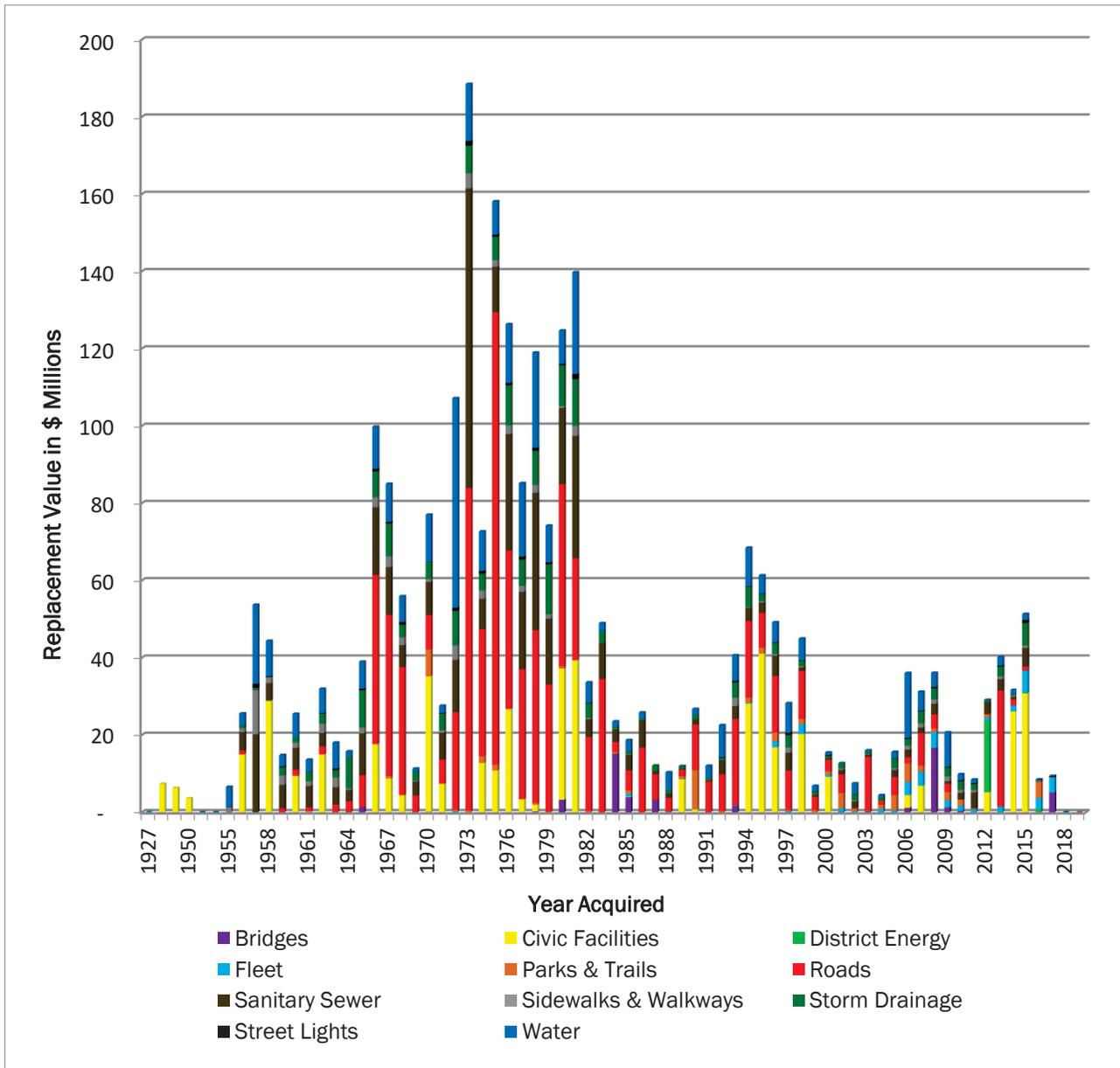


Figure ES-1 Asset Age Profile

As shown in Figure ES-1, many of the City’s assets were built in the 1970s and will need to be strategically replaced while also supporting the City in meeting its service sustainability and climate change adaptation and mitigation goals.

As shown in Figure ES-2, the City’s assets are valued at almost \$3 billion in terms of replacement cost.

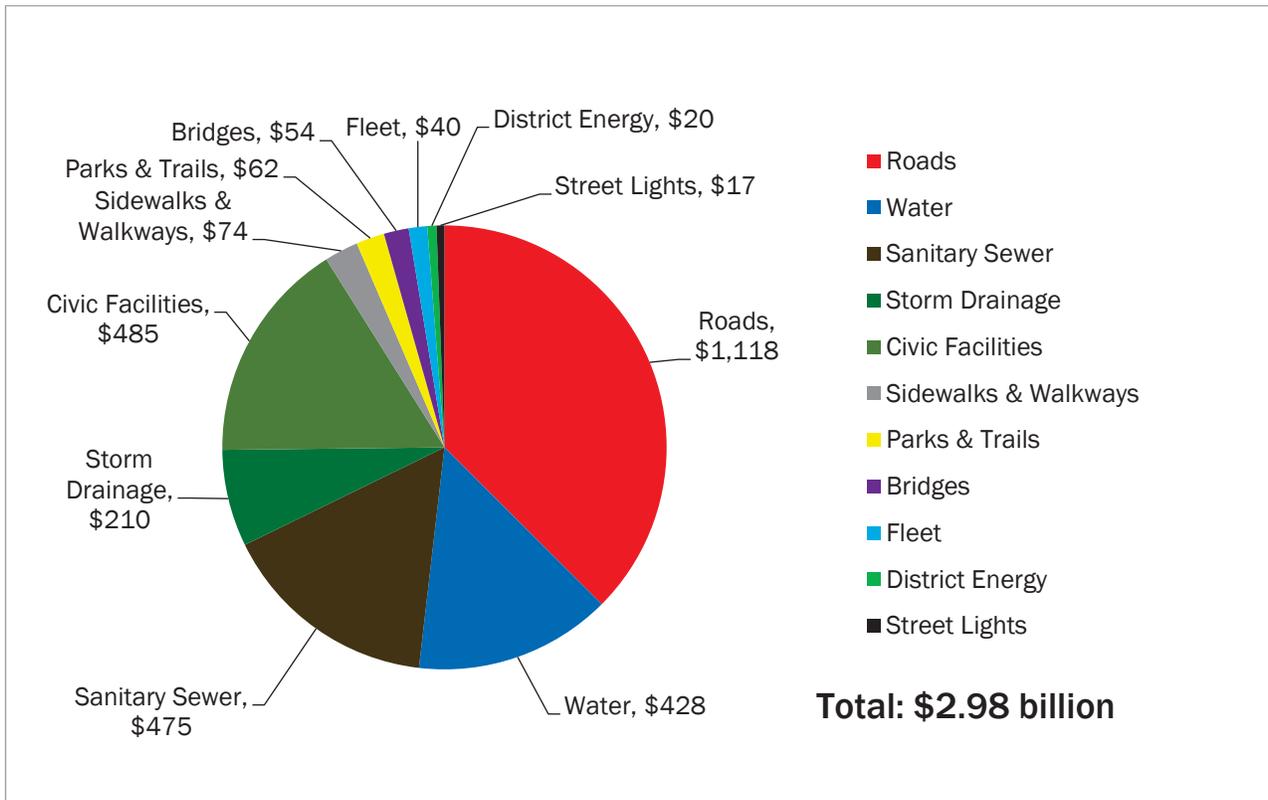


Figure ES-2 Approximate 2017 Replacement Value of City Assets (millions)

Asset Management Practices and Strategic Outlook

As part of the process to develop the Strategy and Roadmap, an assessment was conducted of current asset management processes and practices. *Given the assets the City owns, the state of the City's assets, and the City's current maturity levels in asset management, the City's strategic outlook is overall positive. Current funding levels are likely insufficient to achieve financial sustainability over the long term.* However, the City is investing in improvements in asset management processes and practices and with further improvements, including increased funding levels, the City will move towards service sustainability.

Asset Management Objectives and Improvement Strategies

Based on the strategic outlook, eight key objectives for the City's asset management processes and practices were identified. These are also the basis of the City's Asset Management Policy. Improvement strategies to make progress towards these objectives are summarized in Table ES-1.

Table ES-1 Asset Management Improvement Objectives and Strategies

Objective <i>Where we want to be</i>	Improvement Strategies <i>How to get from where we are to where we want to be</i>
<p>1. The City demonstrates organizational alignment and commitment to sustainable service delivery.</p>	<ul style="list-style-type: none"> a. Formally adopt and enforce the revised Asset Management Policy. b. Improve communication about asset management and decision-making with staff, Council, and the public. c. Reference the AM Policy and Strategy when developing/updating corporate and asset-related strategies, policies, and plans. d. Develop standard operating procedures and maintenance schedules so that they achieve target levels of service.
<p>2. Decisions about service delivery are prioritized in a clear, consistent, and transparent way based on trade-offs between level of service, lifecycle cost, and risk.</p>	<ul style="list-style-type: none"> a. Develop and implement a risk framework for each major asset class. b. Develop and implement a condition assessment and rating framework for all major asset classes, to support identification of risk. c. Establish levels of service for each major asset class. Integrate them into budgeting and capital/O&M/master planning and decisions. d. Develop and implement a prioritization framework (applicable to all asset classes) for annual budgeting that considers risk to service delivery, lifecycle cost, and trade-offs. Integrate into the Financial Plan. e. Develop and regularly update asset management plans for each major asset class, considering lifecycle costs of delivering target LOS and managing risks to target LOS. Integrate them into budgets and capital/O&M/master planning and decisions. f. Ensure that development standards promote selection of lowest lifecycle cost infrastructure options, and align with target level of service. g. Consider lifecycle costs and trade-offs in land use decisions.
<p>3. Appropriate information and tools are available, integrated, and used alongside professional judgement to inform decisions.</p>	<ul style="list-style-type: none"> a. Develop and implement Asset Data Governance Standards. b. Ensure roles, responsibilities, and standard operating procedures for data collection and management are defined and clearly understood. c. Ensure the source of data and limitations of data are clear. d. Collaborate across departments/asset owners during planning and decision-making processes to make decisions using outputs of software/tools. e. Ensure appropriate software systems are in place, are well-used, and are appropriately integrated.
<p>4. Sufficient financial resources are in place to enable sustainable service delivery and continuous improvement in asset management.</p>	<ul style="list-style-type: none"> a. Review the Sustainable Finance Guidelines when developing the annual budget and when establishing cost recovery strategies. b. Ensure taxation, user rates, fees, and charges are informed by lifecycle costs and enable the City to meet target levels of service. c. Develop and implement a pooled / envelope funding model for services. d. Develop and implement a long-term Financial Plan that is informed by lifecycle costs and defined service levels. e. Clearly communicate to Council the capital and operating budget needs to meet levels of service, and communicate trade-offs of not meeting operating needs.

Objective <i>Where we want to be</i>	Improvement Strategies <i>How to get from where we are to where we want to be</i>
5. Sufficient human resources are in place to enable sustainable service delivery and continuous improvement in asset management.	<ul style="list-style-type: none"> a. Develop an Asset Management Steering Committee. b. Ensure that roles and responsibilities in asset management and decision-making (asset management governance) are clear and understood. c. Develop and implement a Knowledge Retention Strategy d. Review staffing levels annually when developing the annual budget. Ensure they are sufficient to provide the defined level of service. e. Provide ongoing training and professional development opportunities to staff that support asset management improvements. f. Ensure that the annual budget and annual departmental work plans are informed by the Asset Management Strategy and Roadmap to enable implementation.
6. The City's approach to asset management builds the City's resiliency to climate change and supports its climate change adaptation and mitigation goals.	<ul style="list-style-type: none"> a. Integrate vulnerability to climate change into the City's risk frameworks and management processes. b. Use the Energy and GHG Management Plan as an input to levels of service and Asset Management Plans. c. Articulate and quantify the municipal services provided by natural assets. Identify and manage risks to these services. d. Develop and implement a Climate Adaptation Plan. Ensure the CAP considers the role of natural assets in achieving adaptation goals. e. Identify and implement opportunities to mitigate climate impacts through City operations. f. Integrate climate impacts into land use planning and decision-making. g. Use the City's regulations and design standards as a tool for climate change adaptation and mitigation.
7. The City continuously improves in sustainable service delivery, and measures, tracks, and communicates progress.	<ul style="list-style-type: none"> a. Implement and regularly update the Asset Management Strategy and 5-Year Roadmap. b. Measure, track, and communicate progress on implementation of the Asset Management Strategy and Roadmap.
8. Stakeholders are appropriately engaged in decisions about sustainable service delivery.	<ul style="list-style-type: none"> a. Improve communication about asset management and decision-making with staff, Council, and the public. b. Develop and implement a Communication and Engagement Strategy as part of the process to define levels of service. c. Strengthen servicing agreements with lease-holders of City-owned facilities.

Asset Management Roadmap

The City's Asset Management Roadmap describes the following:

- the desired outcomes of each improvement strategy
- specific actions that need to be taken to implement each strategy
- the anticipated impact and effort of each action
- the priority level of each action and when it should be implemented
- responsibility for leading implementation

Part 1

Overview of the Asset Management Strategy and Roadmap

- » The City's Vision as a Sustainable City
- » Challenges to Realizing this Vision
- » Asset Management as a Pathway to Sustainability
- » The Purpose of the Asset Management Strategy and Roadmap
- » Using the Strategy and Roadmap

1.1 The City's Vision as a Sustainable City

The City of Prince George, together with the community, established a vision for the future in its 2010 Integrated Community Sustainability Plan, myPG:

As BC's northern capital, Prince George is a model for sustainable Canadian cities. The local environment is healthy, supporting a robust economy and an enviable quality of life for residents. Everyone has housing they can afford, good food on the table, and a strong, supportive network of friends and co-workers. Built on regional assets, the economy is strong and stable. A vibrant downtown, great community, affordable lifestyle, and spectacular natural setting are Prince George's greatest strengths.

1.2 Challenges to Realizing this Vision

A key challenge facing the City, and indeed local governments across Canada, is the long-term sustainability of services that rely on infrastructure assets, such as roads and sidewalks; water, drainage, and sewer infrastructure; parks and public buildings. Some of the challenges related to sustainable service delivery include:

- Ageing assets need renewal and replacement in order to sustain service levels, and the condition and longevity of assets can be difficult to determine.
- Financing needs for the operation, maintenance, replacement, and renewal of assets can be large, requiring planning for large peaks and troughs in expenditure for renewing and replacing such assets.
- As communities grow and land use changes, the demand for new and improved services grows, which adds to the financing complexity.
- Impacts from climate change, such as increased flooding, forest fires, water shortages, and increased population growth present risks to service and financial sustainability.
- The construction, operation, maintenance, replacement, and renewal of assets contributes to greenhouse gas emissions that in turn contribute to climate change.

1.3 Asset Management as a Pathway to Sustainability

The challenges described above call for the City to manage its assets in a comprehensive and systematic way that supports **sustainable service delivery**, meaning that services are provided to the community today in a way that:

- is fiscally, environmentally, and socially responsible;
- is adaptive to changing circumstances and future conditions, including changes in climate; and
- does not compromise the ability of future generations to meet their own needs.

Asset management is an integrated and continuous process of making capital and operational decisions about assets that are informed by cost, risk, and service levels.

Sustainable service delivery is the goal of asset management

1.4 Purpose of the Asset Management Strategy and Roadmap

The Asset Management Strategy and Roadmap supports the City in achieving its 2040 vision to be a model for sustainable Canadian cities through improvements in asset management processes and practices. The Strategy and Roadmap outline strategic improvements for how the City:

- effectively aligns corporate plans, strategies, and operations;
- makes informed and transparent decisions about asset management, including the long-term planning, financing, operation, maintenance, upgrade, renewal, replacement, and disposal of capital infrastructure assets;
- continuously improves its asset management processes and practices;
- builds resiliency to the impacts of climate change through asset management decisions; and
- engages stakeholders in asset management.

The **Strategy** describes where the City is currently at in terms of the assets it owns, the City's maturity in asset management processes and practices, where the City wants to be, and strategies to get there.

The **Roadmap** details the prioritized actions that the City will take to implement the strategies, as well as the timeline over which the actions should be carried out and the resources required to do so.

1.5 Using the Asset Management Strategy and Roadmap

The Strategy and Roadmap is a tool for both City staff and Council. Staff will use the Strategy and Roadmap to guide operations, annual work planning, and annual budgeting. Council will use the Strategy and Roadmap to inform their decisions about the allocation of resources towards priorities for improvements in asset management.

Part 2

Asset Management Framework and Governance

- » Asset Management Framework
- » Asset Management Planning Process
- » Governance Structure

2.1 The City’s Asset Management Framework

The City’s asset management framework is shown in Figure 1 below.

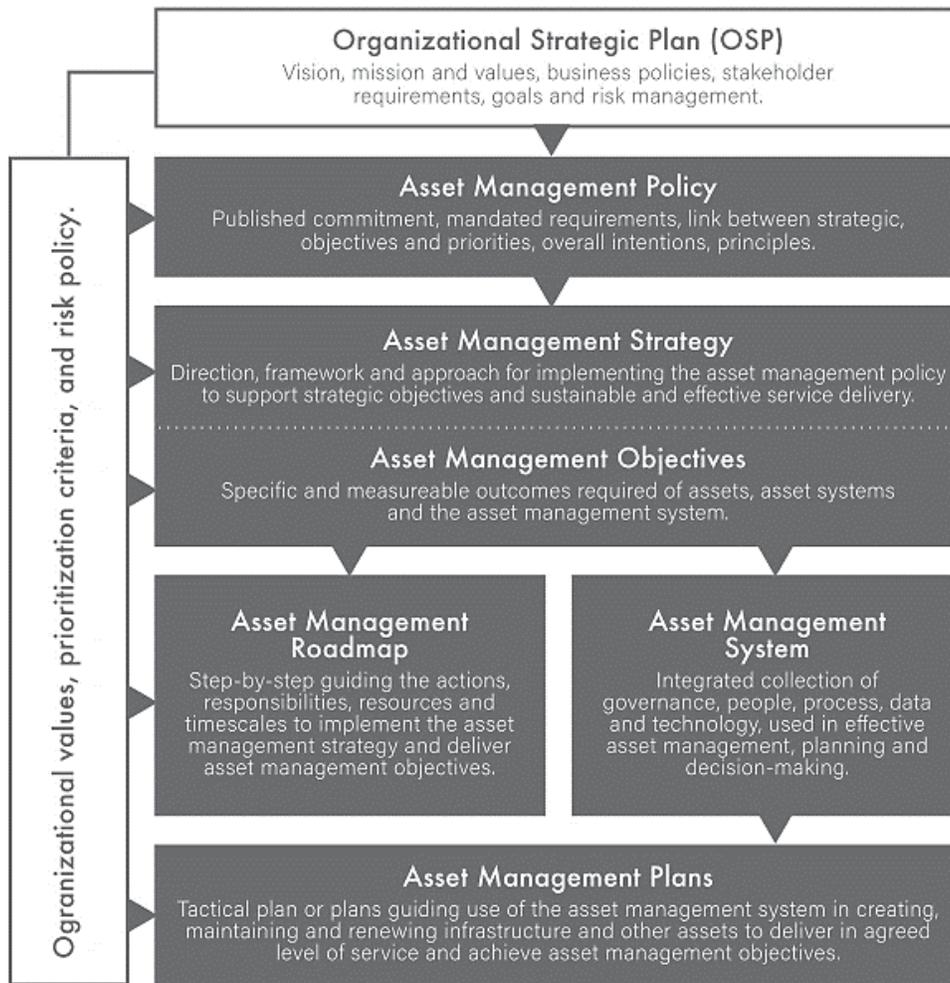


Figure 1 Asset Management Framework

None of these components is static – each is a “living” tool or system aimed at supporting the City in providing sustainable service delivery. The intent is that each component is developed and then reviewed on a regular basis so that all components are increasingly more integrated and relevant to the City.

With that said, the framework shown above represents a desired ‘end state’ in terms of how the various components of the framework fit together and inform one another. Each is currently at various stages of maturity, and the 5-Year Asset Management Roadmap describes strategies and actions to progressively build out the framework.

2.2 Asset Management Planning Process

Asset Management for Sustainable Service Delivery: A BC Framework establishes a high-level, systematic approach that supports local governments in moving toward service, asset, and financial sustainability through an asset management process. This process is what is used by the City, and it is illustrated in Figure 2.

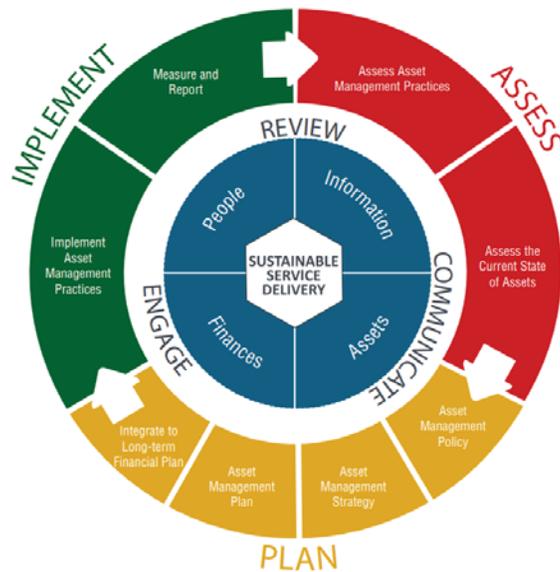


Figure 2 Asset Management Planning Process

2.1 Governance Structure

Governance is the structure of responsibilities for the oversight and implementation of asset management, for the purpose of providing sustainable service delivery. An overview of the City’s asset management governance structure is illustrated in Figure 3.



Figure 3 Asset Management Governance

Part 3

Where are we at?

- » What Assets do we Have?
- » What is the State of our Assets?
- » Maturity of Asset Management Processes and Practices
- » Strategic Outlook

3.1 What Assets Do We Have?

The City uses infrastructure assets to provide services to the community. The range of infrastructure assets and the services provided from the assets is shown in Table 1.

Table 1 Assets Used for Providing Services

Asset Class	Description	Services Provided
Roads	Road network made up of 325 lane km's of arterials, 143 lane km's of major collectors, 191 lane km's of minor collectors, 816 lane km's of locals, 60 lane km's of alleys, and 254 lane km's of gravel roadways.	Safe and reliable transportation for the community, region, industry and tourism.
Water	Groundwater source wells and distribution system with chlorination disinfection. Comprised of wells, pumping stations, pressure reducing valves, reservoirs, and 560km of pressurized water mains. Includes 2,100 hydrants and 7,100 valves.	Safe, reliable drinking water and fire protection for most residential, commercial, industrial, and institutional properties within City limits.
Sanitary Sewer	Sewer collection and treatment. Comprised of sewer liftstations for pumping sewerage to the Wastewater Treatment Plant or lagoons through 450km of gravity sewer mains and 17km of pressurized forcemains. Includes 5,300 manholes and 220km of service connections.	Sewer collection from residential, commercial, industrial, and institutional properties within City limits.
Storm Drainage	Storm water is collected through 5,500 catchbasins in the roadways and 40km of service connections from some commercial and residential properties. It is transported through 370km of storm mains and several liftstations.	Storm water collection from some residential, commercial, industrial, and institutional properties within City limits. Collection of storm water runoff from roadways.
Civic Facilities	65 City-owned buildings comprised of Fire Halls, Police, Aquatics, Arenas, Cultural, Parking, Administration, and buildings leased to 3 rd party users.	Provide comfortable, healthy, social and recreational spaces for the use of the local government and the community.
Sidewalks & Walkways	193km of sidewalks and 13km of walkways.	Safe and reliable pedestrian network along roadways (sidewalks) and between roadways (neighbourhood walkways).
Parks & Trails	362 parks and green spaces (equaling 1,894ha), 25 ball diamonds, 18 sport fields, 38 basketball courts, 40 tennis courts, 282 park benches, 47 playgrounds, and 114km of trails.	Offerings range from nature and major parks and trails with, to athletic parks that cater to a variety of recreational activities, to downtown parks featuring prime areas for events or festivals.
Bridges	18 vehicle bridges and 6 pedestrian bridges.	Safe and reliable transportation connections over water bodies and other roadways.
Fleet	260 fleet vehicles and equipment comprised of passenger vehicles, construction vehicles and equipment, fire	Fleet vehicles and equipment support all of the services provided by the City.

Asset Class	Description	Services Provided
	trucks, vacuum/flusher trucks, cargo trailers, ice resurfacers, road patching equipment, manlifts, landscaping equipment, and snow clearing equipment.	
District Energy	Comprised of nearly 3km of distribution piping from Lakeland Mills sawmill to the downtown core. Includes a backup boiler facility and 12 heat exchangers.	Provides space heating and hot water to 11 downtown buildings using renewable energy.
Street Lights & Traffic Signals	4,672 streetlights along roadways including underground and some overhead electrical wiring. 43 pedestrian and traffic signalized intersections.	Lighting and safe traffic movements for pedestrians and drivers
Cemetery	50 hectares of land and a mausoleum. Includes an administration building and an equipment building.	Traditional burial for both full-casket and cremated remains. Crypts for casket interment or niches for cremated remains are available in the Mausoleum.
Solid Waste	Parks and street decorative garbage bins and residential automated garbage carts.	Residential garbage pickup
Transit	Some City owned bus shelters. Most assets are owned and operated by BC Transit.	Bus service in partnership with BC Transit

3.2 What is the State of our Assets?

Table 2 and Figure 4 show the 2017 replacement values of City's assets. The asset age profile is shown in Figure 5.

Table 2 Asset Replacement Values (2017 dollars)

Asset Class	Replacement Cost (\$millions)
Roads	1,118
Water	428
Sanitary Sewer	475
Storm Drainage	210.5
Civic Facilities	485
Sidewalks & Walkways	74
Parks & Trails	62
Bridges	54
Fleet	40
District Energy	20
Street Lights	17
Total	2,984

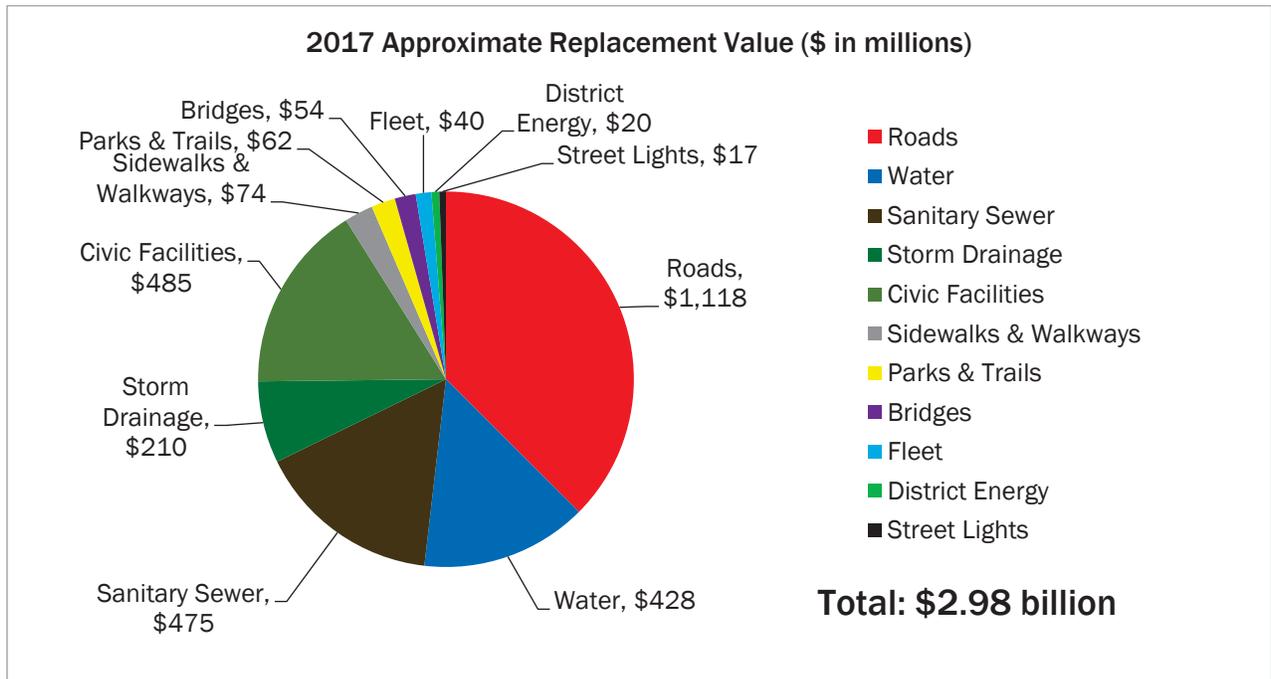


Figure 4 Approximate 2017 Replacement Value of City Assets (millions)

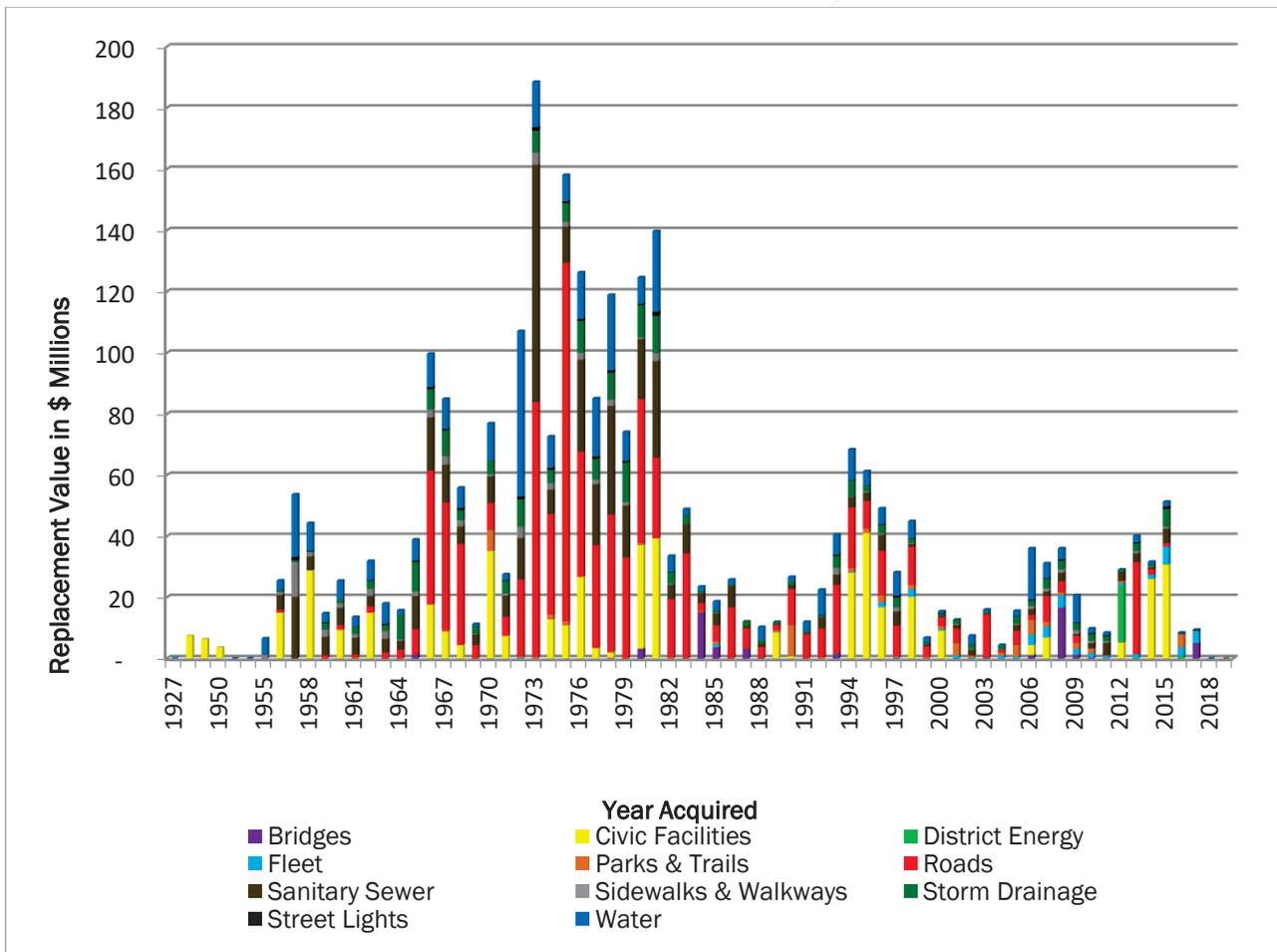


Figure 5 Asset Age Profile

The preceding figures and tables show why it is important to have a strategy for effectively managing the City’s assets. They are valued at almost \$3 billion in terms of replacement cost, and many of the City’s assets were built in the 1970s and will need to be strategically replaced while also supporting the City in meeting its service sustainability and climate change adaptation and mitigation goals.

3.4 Maturity of Asset Management Processes and Practices

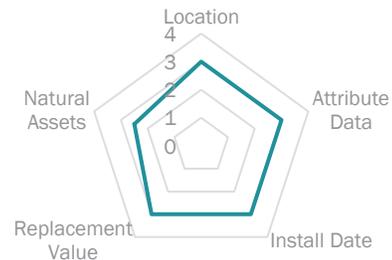
The current maturity of the City’s asset management practices and competencies was assessed to identify strengths, challenges, and opportunities for improvements. The AssetSMART 2.0 assessment tool was used as a framework for assessing the City’s maturity in asset management as it aligns with the BC Framework. The core elements of asset management form the AssetSMART assessment categories and they include:



The assessment was conducted by interviewing 25 members of administration (staff, managers, and senior leadership), and 4 members of Council. The assessment process and findings were documented in detail in the *Asset Management Current-State Assessment* (Urban Systems Ltd., 2018). A summary of the findings of the City’s current maturity is provided below.

UNDERSTANDING OF ASSETS

Overall, the City’s understanding of its assets is quite strong, with some variability between asset classes. The City has been unable to complete or maintain its inventory largely due to high standards for accuracy and precision of data that are not necessarily reflective of the intended use of the data. The City will benefit from developing data standards that reflect the intended use of the data, and from defining roles, responsibilities, and standard operating procedures for data collection and management.



INFORMATION TO SUPPORT DECISIONS

Overall, the City has a lot of information available to support the definition of condition, consequence, and risk; to inform definitions of service levels; to provide strategic direction on decision-making; and to track performance. The City’s challenge is in bringing this information together to make decisions. The City relies heavily on tools to support decisions and may benefit from bringing people together to bridge the gaps that exist in and between some tools. The City will benefit from leveraging its existing information, risk frameworks, and strategic direction to support decision-making, versus “starting from scratch”. The City will also benefit from assessing the impacts of climate change on assets and using this to inform capital and operating decisions.



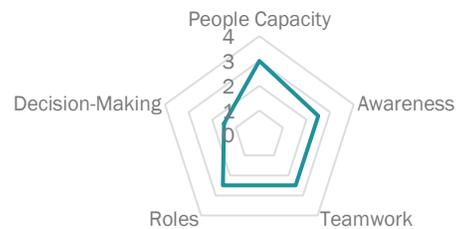
SUSTAINABILITY OF FINANCES

The City does not currently fully recover the cost of providing services. Financial resources are not necessarily being applied to where they are needed most and there is pressure on the general fund. This leads to some services being chronically under-funded. The City will benefit from a comprehensive, consistent, and transparent approach to determining funding needs; communicating these needs to Council; and updating and enforcing policies to help ensure decisions are being made in accordance with best practices.



PEOPLE CAPACITY AND EFFECTIVENESS

Like many communities, the City is currently doing a lot with limited resources. Staff strive to move towards proactive planning, but are often occupied with immediate pressures. Local conditions mean staff are stretched across different services and need to regularly adapt to new functions. The City will benefit from bringing together people in cross-departmental forums to address servicing issues not readily solved by tools. The City will also benefit from developing and implementing a knowledge retention strategy to capitalize on the deep experience of its seasoned staff and the young talent available.



3.5 Strategic Outlook

Given the assets the City owns, the state of the City's assets, and the City's current maturity levels in asset management, the City's strategic outlook is overall positive. Current funding levels are likely insufficient to achieve financial sustainability over the long term; however, the City is investing in improvements in asset management processes and practices and with further improvements, including increased funding levels, the City will move towards service sustainability.

Part 4

Where do we want to be?

- » The City's Vision and Goals
- » Asset Management Objectives

4.1 The City's Vision and Goals

The City's vision for 2040, as expressed in *myPG*, is to be a **model for sustainable Canadian cities**.

myPG articulates numerous goals related to this vision. These goals describe where the City wants to be in terms of "Social Development", "Environment", "Economic Development", and "City Government".

The City's Asset Management Strategy and Roadmap aims to support the City in achieving all of these goals; however, those that most directly guide the Strategy and Roadmap fall under the category of "City Government" and "Environment" and are listed in Table 3.

Table 3 City Goals that are Supported by Asset Management

Goal	Description
Sustainable Infrastructure	The City manages the procurement, construction, maintenance, rehabilitation, and replacement of its physical assets considering lifecycle cost, risk, and service level continuity.
Sustainable Fiscal Management	The City will be financially sustainable, with the revenue resources required to support its plans and infrastructure and provide services that citizens and businesses need.
Organizational Excellence	The City is a responsive, cost-effective, people-centered service delivery organization that understands customer needs and strives to exceed the expectations of those it serves.
Effective Governance	The City works cooperatively with its partners in the government, education, health, and business sectors, and with the Lheidli T'enneh and other First Nation organizations.
Reduce Carbon Emissions and Adapt for Climate Change	Prince George has reduced carbon emissions and dependence on fossil fuels, and is prepared for climate change.
Green City, Green Practices	Prince George is a green city with healthy habitat and forests, and a strong environmental consciousness, led by government and local organizations that demonstrate sustainable practices.

4.2 Asset Management Objectives

The City's Asset Management Policy is a tool that aims to support the City in achieving its vision and goals by establishing objectives for asset management. These objectives provide direction for strategies, actions, and decisions that are implemented at the City so that they are in accordance with asset management best practices.

The City's asset management objectives include the following:

1. The City demonstrates organizational alignment and commitment to sustainable service delivery
2. Decisions about service delivery are prioritized in a clear, consistent, and transparent way based on trade-offs between level of service, lifecycle cost, and risk.
3. Appropriate information and tools are available, integrated, and used alongside professional judgement to inform decisions.
4. Sufficient financial resources are in place to enable sustainable service delivery and continuous improvement in asset management.

5. Sufficient human resources are in place to enable sustainable service delivery and continuous improvement in asset management.
6. The City's approach to asset management builds the City's resiliency to climate change and supports its climate change adaptation and mitigation goals.
7. The City continuously improves in sustainable service delivery, and measures, tracks, and communicates progress.
8. Stakeholders are appropriately engaged in decisions about sustainable service delivery.

The Strategy and Roadmap sets out the path for meeting these objectives through strategic improvements beginning in 2019.

Part 5

How will we get there?

- » Asset Management Improvement Strategies
- » Roadmap for Implementing the Strategies

5.1 Asset Management Improvement Strategies

The following strategies will support the City in achieving its 2040 vision and goals and the objectives set out in the Asset Management Policy. Table 4 summarizes the City’s objectives and improvement strategies.

Table 4 Asset Management Improvement Strategies

Objective <i>Where we want to be</i>	Improvement Strategies <i>How to get from where we are to where we want to be</i>
1. The City demonstrates organizational alignment and commitment to sustainable service delivery.	<ul style="list-style-type: none"> a. Formally adopt and enforce the revised Asset Management Policy. b. Improve communication about asset management and decision-making with staff, Council, and the public. c. Reference the AM Policy and Strategy when developing/updating corporate and asset-related strategies, policies, and plans. d. Develop standard operating procedures and maintenance schedules so that they achieve target levels of service.
2. Decisions about service delivery are prioritized in a clear, consistent, and transparent way based on trade-offs between level of service, lifecycle cost, and risk.	<ul style="list-style-type: none"> a. Develop and implement a risk framework for each major asset class. b. Develop and implement a condition assessment and rating framework for all major asset classes, to support identification of risk. c. Establish levels of service for each major asset class. Integrate them into budgeting and capital/O&M/master planning and decisions. d. Develop and implement a prioritization framework (applicable to all asset classes) for annual budgeting that considers risk to service delivery, lifecycle cost, and trade-offs. Integrate into the Financial Plan. e. Develop and regularly update asset management plans for each major asset class, considering lifecycle costs of delivering target LOS and managing risks to target LOS. Integrate them into budgets and capital/O&M/master planning and decisions. f. Ensure that development standards promote selection of lowest lifecycle cost infrastructure options, and align with target level of service. g. Consider lifecycle costs and trade-offs in land use decisions.
3. Appropriate information and tools are available, integrated, and used alongside professional judgement to inform decisions.	<ul style="list-style-type: none"> a. Develop and implement an Asset Data Governance Standards. b. Ensure roles, responsibilities, and standard operating procedures for data collection and management are defined and clearly understood. c. Ensure the source of data and limitations of data are clear. d. Collaborate across departments/asset owners during planning and decision-making processes to make decisions using outputs of software/tools. e. Ensure appropriate software systems are in place, are well-used, and are appropriately integrated.
4. Sufficient financial resources are in place to enable sustainable service delivery and continuous improvement in asset management.	<ul style="list-style-type: none"> a. Review the Sustainable Finance Guidelines when developing the annual budget and when establishing cost recovery strategies. b. Ensure taxation, user rates, fees, and charges are informed by lifecycle costs and enable the City to meet target levels of service. c. Develop and implement a pooled / envelope funding model for services. d. Develop and implement a long-term Financial Plan that is informed by lifecycle costs and defined service levels. e. Clearly communicate to Council the capital and operating budget needs to meet levels of service, and communicate trade-offs of not meeting operating needs.
5. Sufficient human resources are in place to enable sustainable service	<ul style="list-style-type: none"> a. Develop an Asset Management Steering Committee. b. Ensure that roles and responsibilities in asset management and decision-making (asset management governance) are clear and understood. c. Develop and implement a Knowledge Retention Strategy

Objective <i>Where we want to be</i>	Improvement Strategies <i>How to get from where we are to where we want to be</i>
delivery and continuous improvement in asset management.	<ul style="list-style-type: none"> d. Review staffing levels annually when developing the annual budget. Ensure they are sufficient to provide the defined level of service. e. Provide ongoing training and professional development opportunities to staff that support asset management improvements. f. Ensure that the annual budget and annual departmental work plans are informed by the Asset Management Strategy and Roadmap to enable implementation.
6. The City's approach to asset management builds the City's resiliency to climate change and supports its climate change adaptation and mitigation goals.	<ul style="list-style-type: none"> a. Integrate vulnerability to climate change into the City's risk frameworks and management processes. b. Use the Energy and GHG Management Plan as an input to levels of service and Asset Management Plans. c. Articulate and quantify the municipal services provided by natural assets. Identify and manage risks to these services. d. Develop and implement a Climate Adaptation Plan. Ensure the CAP considers the role of natural assets in achieving adaptation goals. e. Identify and implement opportunities to mitigate climate impacts through City operations. f. Integrate climate impacts into land use planning and decision-making. g. Use the City's regulations and design standards as a tool for climate change adaptation and mitigation.
7. The City continuously improves in sustainable service delivery, and measures, tracks, and communicates progress.	<ul style="list-style-type: none"> a. Implement and regularly update the Asset Management Strategy and 5-Year Roadmap. b. Measure, track, and communicate progress on implementation of the Asset Management Strategy and Roadmap.
8. Stakeholders are appropriately engaged in decisions about sustainable service delivery.	<ul style="list-style-type: none"> a. Improve communication about asset management and decision-making with staff, Council, and the public. b. Develop and implement a Communication and Engagement Strategy as part of the process to define levels of service. c. Strengthen servicing agreements with lease-holders of City-owned facilities.

5.2 Roadmap for Implementing the Strategies

The City's Asset Management Roadmap is shown on the following pages. It describes the following:

- the desired outcomes of each improvement strategy
- specific actions that need to be taken to implement each strategy
- the anticipated impact and effort of each action
- the priority level of each action and when it should be implemented
- responsibility for leading implementation

	<p>Relevant corporate strategies, policies, and plans are informed by each other and they support sustainable service delivery.</p>	<p>Present to Council for adoption early in 2019.</p>	M	L	H	2019				
<p>Relevant corporate strategies, policies, and plans are informed by each other and they support sustainable service delivery.</p>	<p>Review the AM policy every five years (with the Asset Management Strategy and Roadmap) and identify areas where greater enforcement is required and take actions to improve</p> <p>Connect to monitoring indicators referenced in Strategy 7b.</p>	<p>Present to Council for adoption early in 2019.</p>	H	M	H	2023				
<p>Council and senior leadership support staff in providing sustainable service delivery.</p>	<p>Develop and implement an internal communication plan that leverages internal champions throughout the organization.</p> <p>Develop and implement an external communication plan.</p>	<p>Present to Council for adoption early in 2019.</p>	M	M	M	2019				
<p>Relevant corporate strategies, policies, and plans are informed by each other and they support sustainable service delivery.</p>	<p>Include review of the AM Strategy and Roadmap in the Terms of Reference for the development/ update of each strategy/ policy/ plan.</p>	<p>Present to Council for adoption early in 2019.</p>	H	M	H	2020				
<p>Standard operating procedures support sustainable service delivery.</p>	<p>Use a risk-based approach to identify key operational activities for which SOPs will be useful to help mitigate risk. Develop written SOPs for those key activities. Identify key operational activities and then develop written documentation of SOPs for each activity in a phased approach according to priority.</p> <p>Develop a maintenance schedule for major asset classes to achieve target levels of service.</p>	<p>Present to Council for adoption early in 2019.</p>	H	H	M	2022				
<p>A risk framework (considering both likelihood and consequence) is in place and is used to inform decisions. Risk is consistently considered and included in decision-making processes across the organization.</p>	<p>Develop a corporate risk management framework that outlines the types of risks to meeting service levels that will be identified (e.g., climate change, financial, etc.), defines risk assessment parameters (definitions for consequence and likelihood of failure by major asset class), and the process for managing risks.</p> <p>Conduct a GIS-based risk assessment for each major asset class, starting with Utilities/Roads. Leverage existing information on break history and information about condition assessments to inform likelihood of failure. Use spatial information and other existing data to assess consequence of failure. Enable GIS-based analytics and reporting on risk.</p> <p>Use the results of the risk framework to inform the capital planning process, operations procedures, and maintenance schedules for each major asset class.</p> <p>Monitor risks over time and update risk assessment annually.</p>	<p>Present to Council for adoption early in 2019.</p>	H	H	H	2021				

<p>Develop and implement condition assessment rating framework for major asset classes, support identification.</p>	<p>A risk framework (considering both likelihood and consequence) is in place and is used to inform decisions.</p>	<ul style="list-style-type: none"> Develop a consistent condition rating framework for all major asset classes. Identify gaps in condition information and progressively fill them using the framework. Use information about condition to inform risk and the development of a maintenance schedule. This could also inform the prioritization of which SOPs and maintenance schedules are developed. 	<p>M</p>	<p>M</p>	<p>L</p>	<p>2023</p>	<p>(Approved)</p>
<p>Establish levels of service for each major asset class. Integrate into budgeting and O&M/master planning and decisions.</p>	<p>Levels of service are defined for each asset class and are based on municipal regulatory requirements, best practices for lifecycle optimization and risk management, and customer expectations and willingness to pay, and are used to inform decisions.</p>	<ul style="list-style-type: none"> Define and document current and target levels of service for each major asset class. Roads and Facilities are most ready for this process. Leverage NWWBI data to define LOS for Utilities. Identify capital projects, operational procedures, or maintenance practices required to address the gap between current and target LOS. Incorporate these projects into relevant plans and budgets. Revise target LOS where required to meet affordability constraints. 	<p>H</p>	<p>H</p>	<p>H</p>	<p>2019 & Ongoing</p>	
<p>Develop and implement prioritization framework (applicable to asset classes) for budgeting that addresses risk to service, lifecycle cost, trade-offs. Integrate the Financial Plan. Consider both asset and new assets, ongoing O&M.</p>	<p>Investments in improvements to service delivery are prioritized using a clear and transparent set of criteria. Trade-offs between level of service, cost, and risk are documented, understood, and used to inform decisions.</p>	<ul style="list-style-type: none"> Establish clear and consistent prioritization criteria (including risk) for annual budgeting purposes. Implement through the annual budgeting process. 	<p>M</p>	<p>H</p>	<p>L</p>	<p>2025</p>	
<p>Develop and regularly update asset management plans for major asset class, defining lifecycle and managing target LOS. Integrate into budgets and O&M/master planning and decisions.</p>	<p>The full lifecycle cost of any new City-owned asset is considered and used to understand cumulative impacts to operations and to inform decisions.</p>	<ul style="list-style-type: none"> Develop a “LCC Index” or resource that provides unit lifecycle costs for major assets. Update regularly in advance of updates to AMPs using information from Cityworks. Develop AMPs for each major asset class. Use LCC Index to integrate lifecycle costs into the AMP. Update every 4 years as part of election cycles. 	<p>M</p>	<p>H</p>	<p>L</p>	<p>2024 & Ongoing</p>	
<p>Develop standards that reflect the lifecycle costs of infrastructure.</p>	<p>Development standards reflect the lifecycle costs of infrastructure.</p>	<ul style="list-style-type: none"> Review current development standards and identify areas of improvement. Update standards as necessary. 	<p>M</p>	<p>H</p>	<p>M</p>	<p>2020</p>	
<p>Consider lifecycle costs trade-offs in land decisions.</p>	<p>Trade-offs between level of service, cost, and risk are documented, understood,</p>	<ul style="list-style-type: none"> Evaluate the lifecycle cost of servicing scenarios in potential developments using CLIC. Communicate the results to Council to inform decisions about development 	<p>L</p>	<p>M</p>	<p>L</p>	<p>2019</p>	

	and used to inform decisions.						
lop and implement	The City continues to develop and maintain a complete and accurate asset inventory, including all critical assets. Data is accessible to all who need it.	<ul style="list-style-type: none"> Develop a committee of 'data stewards', with staff representation from each major asset type, and clearly define their role and responsibilities (Implementation of the Asset Data Governance Standards). By major asset class, do a detailed assessment of data completeness and accuracy. Identify the root cause(s) of data inaccuracy. Identify and map current data collection and management processes and opportunities for improvement, including opportunities to leverage development-triggered works to collect information on offsite assets. Develop an Asset Data Management and Governance Improvement Plan. Connect information gaps to decision-making requirements and prioritize gap-filling across asset types. Include implementation plan, and identify resources required. Follow up on plan annually. (Implementation of the Asset Data Governance Standards). Identify and map data collection and management processes. Identify clear roles and responsibilities within these processes. May be done as part of the Asset Data Management and Governance Improvement Plan. Connect to Strategy 1d. 	<p>H</p> <p>H</p> <p>H</p> <p>H</p>	<p>H</p> <p>H</p> <p>H</p> <p>H</p>	<p>H</p> <p>H</p> <p>H</p> <p>H</p>	<p>2020</p> <p>2020</p> <p>2019</p> <p>2019</p>	
re roles, nsibilities, and arding standard operating edures for data ction and gement are ed and clearly rstood.	All staff involved in infrastructure service delivery understand their role and see how their work contributes to sustainable service delivery. Standard operating procedures support sustainable service delivery.	<ul style="list-style-type: none"> Add an attribute to the GIS asset data structure to identify the accuracy of the information. Communicate the accuracy of data used to inform decisions and identify limitations. Meet in inter-departmental groups as part of capital planning, budgeting, asset management planning processes to identify projects and timing. Consider timing of private development. Continue to provide regular training opportunities to staff on the use of software systems. Review the Sustainable Finance Guidelines when developing the annual budget, at both the staff and Council level. 	<p>L</p> <p>L</p> <p>M</p> <p>M</p>	<p>L</p> <p>M</p> <p>L</p> <p>L</p>	<p>L</p> <p>M</p> <p>L</p> <p>L</p>	<p>2019</p> <p>2019 & Ongoing</p> <p>Ongoing</p> <p>Ongoing</p>	
re the source of and limitations of are clear.	Limitations of qualitative and quantitative data being used to inform decisions are documented and understood.	The outputs of software systems and other tools are used as inputs to collaborative discussions in which decisions are ultimately made using professional judgement. Suitable software systems are in place and integrated to the extent practical, and staff know how to use them.	Financial decisions are in alignment with the Sustainable Finance Guidelines				
borate across ertments/asset rrs during planning decision-making sses to make ions using outputs ftware/tools. re appropriate are systems are in , are well-used, and appropriately rated.							
aw the Sustainable ce Guidelines o developing the b, direct and vices							

Identify and implement opportunities to mitigate climate impacts through operations.	Climate change impacts are considered in City operations.	Conduct an operations review to identify opportunities for improvement. Note that this may be done through the process to establish SOPs.	M	H	L	2026			
Integrate climate impacts into land use planning and decision-making.	Asset management and climate change impacts are considered in land use decisions.	Review and update flood mapping approximately every 10 years as per EGBC Guidelines. Review maps of areas that are at high risk for wildfire and landslide (e.g., tree death resulting from pine beetle impacts) and use this to inform land use decisions. Use scenario planning to develop land use plans and neighbourhood plans, considering the impact of impervious area on flooding and the interface of land use with wildfire and flood risk. Consider energy use/GHG emissions in decisions about servicing land use.	M	H	L	2026			
The City's regulations and design standards as a tool for climate change adaptation and mitigation.	Climate change impacts are considered in the design and/or rehabilitation of infrastructure and their business case options in order to evaluate trade-offs.	Conduct a review of City regulations and design standards and identify opportunities for updates to support climate change adaptation and mitigation goals (including flood mapping and alternative design using natural assets). Update standards as necessary.	M	H	M	2020			
Implement and regularly update the Asset Management Strategy 5-Year Roadmap.	An Asset Management Strategy and Improvement Plan ("Roadmap") are in place and inform the City's approach to improvement in sustainable service delivery.	Implement the Strategy and Roadmap with leadership from the AM Steering Committee and support from all staff involved in asset management. Review the Strategy and Roadmap on an annual basis to identify what has been completed, what has been postponed, and why. Update the Strategy and Roadmap every five years based on progress the City has made and what has been learned from implementing asset management.	H	M	H	2019 & Ongoing			
Ensure, track, and communicate progress implementation of Asset Management Strategy and Roadmap.	The City measures, tracks, and communicates progress towards strategic goals using meaningful and simple indicators.	Identify indicators of progress Measure progress indicators during the annual review of the Strategy and Roadmap Visually communicate progress on implementation of the Strategy and Roadmap in staff common areas	M	M	H	2019			
Improve communication about asset management and decision-making with Council, and the public.	Levels of service, and trade-offs between costs and services, are informed by and understood by staff, Council, stakeholders, and the public.	Develop and implement an internal communication plan. Develop and implement an external communication plan.	M	M	M	2019			

		(L-1,M1,I,1,1)	(L-1,M1,I,1,1)	(L-1,M1,I,1,1)	(L-1,M1,I,1,1)	(L-1,M1,I,1,1)	(Approx. Year)
<p>Develop and implement communication and engagement Strategy as part of the process to define levels of service.</p>	<p>Public input used to inform decisions about service delivery is representative of the target customer.</p>	<ul style="list-style-type: none"> Develop a Communication & Engagement Strategy as part of the process to define LOS for each major asset class. 	<p>H</p>	<p>M</p>	<p>H</p>	<p>2019</p>	
<p>Strengthen servicing agreements with leaseholders of City-owned facilities.</p>	<p>City-owned facilities are maintained in such a way as to maximize service life.</p>	<ul style="list-style-type: none"> Clearly define the input provided by the community in the process to develop LOS, including the number of people engaged, where they live, etc. 	<p>H</p>	<p>H</p>	<p>M</p>	<p>2020 & Ongoing</p>	
		<ul style="list-style-type: none"> Review existing servicing agreements at time of renewal and clearly identify City versus leaseholder responsibilities to maintain the asset. Include such requirements in all new leases. 	<p>M</p>	<p>M</p>	<p>M</p>	<p>Ongoing</p>	