



20 Year Investment Plan and Asset Management Plan Update

CITY OF NANAIMO
JUNE 2023

Acknowledgements

The *20 Year Investment Plan and Asset Management Plan Update* was led by the Asset Management Steering Committee. This project had significant input from the Engineering, Facilities, Finance, Information Technology, Park Operations, and Public Works departments including both planning and operations staff.

The City of Nanaimo (the City) would also like to acknowledge the \$500,000 grant from the Union of BC Municipalities (UBCM) Strategic Priorities Fund for the Facilities and Park Amenities Condition Assessment Program project. The available results of that project have been incorporated into this update.

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Executive Summary

Required changes in financial reporting for municipalities in 2008 brought attention to aging infrastructure, and challenges facing local governments in funding operations, renewal, and growth of their infrastructure. Asset management (AM) principles and practices were formalized to help local governments face these challenges.

Increased awareness and promotion of AM is evident as a growing number of provincial and federal government grant programs require demonstration of AM capacity to determine local government's eligibility for grant funding.

The City's investment in infrastructure supports delivery of needed and desired services to the community. The City faces operational, environmental, social, and financial challenges in delivering these services due to aging infrastructure, growth, climate change, changing regulatory standards and the community's demand for new services. A robust asset management system (AM System) provides decision makers with information and analysis for infrastructure investment.

The City began developing its AM knowledge and capacity in 2008. An Asset Management Steering Committee was formed to lead and coordinate ongoing improvements to the organization's AM capabilities and competencies. The Committee has representation from across the organization including Engineering, Development, Facilities, Finance, Park Operations, and Public Works. This is the fourth update brought forward by the Committee to Council.

This 20 Year Investment Plan and Asset Management Plan Update is based on 2021 inventory and will provide the public and Council with an overview of the City's long-term investment plans and funding strategies. The update reflects the best information and assumptions available at the time of updating. Plans are continuously evolving as incremental improvements are made to improve inventory data,

and update assumptions and condition information. The purpose of the update is attention directing and to support proactive decision making. The update includes current investment in strategic initiatives, programs and projects, annual investment programs for renewal of existing infrastructure and new/upgraded infrastructure required for growth to maintain current levels of service. The update will support Council's review and decision making regarding current planning processes, the City's AM System and funding strategies. The City's planning processes include:

- Asset Management Lifecycle Plans for each infrastructure type.
- Strategic Plans adopted by Council.
- Development Cost Charges (DCC) Project Plans
- 10 Year Departmental Project Plans that incorporate AM and Strategic Plans
- Five Year Financial Plans

Projects are identified through longer range planning processes and prioritized in 10 year plans, organized by department, and further prioritized in the City's Five Year Financial Plans. As projects move ahead in each planning process, additional work is completed to refine timing and cost estimates and to coordinate with other types of infrastructure projects. Resource and funding constraints are considered when projects are included in the City's Five Year Financial Plan.



20 Year Investment Plan Update

The 20 Year Investment Plan has been prepared for attention directing purposes and to allow Council to review and make decisions. Projected investment over the next twenty years is \$2.6 billion and current funding strategies may provide \$1.6 billion. Strategies are identified to help address the projected funding shortfall of approximately \$1.0 billion including the recommendation to borrow as the funding strategy for the major capital projects under development (project costs, timing, and required borrowing will be refined as projects are further developed). The projected shortfall includes \$74.9 million in DCC contributions for new/upgraded infrastructure. A DCC review is beginning in 2023 and a new bylaw is intended to address this shortfall.

Asset Management Plan Update

The Asset Management Plan Update will provide:

- An overview of the City's AM System
- Infrastructure information by asset type – e.g., water, sewer, transportation
- AM System improvement initiatives

Recommendations

- Continue the annual one per cent increases to property taxes for contribution to the General Asset Management Reserve Fund for the next five years (2024-2028) or until the next update and recommendations have been presented to Council;
- That the planned decrease in 2027 from two per cent to one per cent in the annual increases to water user fees for contribution to the Water Asset Management Reserve Fund be delayed until the next update and recommendations have been presented to Council;
- Complete the 2023 DCC review and adopt a new bylaw;



- Fund the major capital projects under development from borrowing subject to Council and electoral approval;
- Decommission or remove infrastructure no longer serving its purpose; and
- Implement improvements to the City's AM System:
 - Continue to develop levels of service.
 - Continued implementation and development of Cartegraph, a corporate asset management system (CAMS) software that will map, track, and manage the City's assets and aid future decision making.

History

The City's first Asset Management Plan was presented to Council in November 2010. This plan focused on engineering and public works infrastructure and provided a "big picture" on infrastructure in-service history, projected lifecycle replacement needs, and current funding levels.

In early 2013, the 2012 Asset Management Update was presented to Council. This update included long-term renewal plans for all current asset infrastructures and included the following recommendations which were approved by Council.

- One per cent property tax increases each year until 2017 for contributions to a newly created General Asset Management Reserve Fund;
- Five per cent sanitary sewer user fee increases each year until 2017, then four per cent annual increases until 2022 for contributions to a newly created Sanitary Sewer Asset Management Reserve Fund; and
- 2.5 per cent water user fee increases each year until 2020 for contributions to a newly created Water Asset Management Reserve Fund - in the Fall of 2020 Council approved extending the annual 2.5 per cent water user fees increase to 2021.

In March 2017, the 20 Year Investment Plan and Asset Management Update based on 2016 inventory was presented to Council. The 20 Year Investment Plan included renewal, growth, and strategic projects and was prepared for attention directing purposes. The update included the following recommendations which were approved by Council.

- Continuing annual one per cent property tax increases to 2022 for the General Asset Management Reserve Fund - in the Fall of 2020 Council approved extending the annual one per cent property tax increases for five years or until the next update and recommendations have been presented to Council.

- Completion of the DCC review process and adoption of new DCC bylaw – new DCC bylaw was adopted in April 2018.
- Continued development of the City's AM System including adoption of an AM Policy and an AM Strategy – in May 2018 the City's AM Policy was adopted and the City's Strategic AM Plan was endorsed by Council.
- Completing the next Asset Management Update in five years to reassess the effectiveness of the City's AM capacity and funding strategies.

Long-Term Planning Framework

The City's principal activities include provision of local government services to residents. Services provided include police and fire protection, solid waste collection, management of roads, drainage, sanitary sewer, waterworks, and parks infrastructure, along with the delivery of leisure and cultural services. The City also acts as a regulatory body with respect to business licensing, building permits and inspection, land use, development planning, and subdivision approval services. Services such as library and sewage treatment are provided through other boards and partnerships with other governments.

Long-term plans support the delivery of a wide range of needed and desired services, and the implementation of priorities as identified in City Plan: Nanaimo ReImagined and Council's Strategic Priorities. Long-term plans help prepare the organization to move ahead with needed investigation and design work, and with the timing and allocation of resources and funding.

Asset management lifecycle plans are maintained for all types of City infrastructure. These attention directing plans support identification of needed condition assessment programs and are compared to current maintenance information to identify priority projects for infrastructure renewal.

Review of the City's infrastructure capacity and identification of new/upgraded infrastructure needed



due to development-related growth are undertaken in periodic DCC Reviews. The current DCC bylaw was adopted in 2018. In 2023, the City is undertaking a DCC Review process which will include:

- Updating community growth and type of development estimates.
- Projecting infrastructure investment including timing and cost.
- Proposed changes to current charges.

A separate DCC Review report will provide additional information and seek endorsement from Council for proceeding to next steps including public consultation and new DCC bylaw.

Five Year Financial Plans

In accordance with the laws of British Columbia (BC) through the Community Charter, municipalities must prepare a five year financial plan each year. Priority projects are identified and included within the City's Financial Plans that minimize risk to delivery of services, support development in the community, and implement Council's strategic priorities and plans within reasonable funding levels.

Levels of Service

The term level of service is defined as the degree to which a service is provided. To residents, this takes the form of the following questions:

What is the condition or quality of service? (CONDITION)

Is it the right service and suited for its intended purpose? (FUNCTION)

Do we need more or less of this service? (CAPACITY/USE)

These questions reflect values that are important to the community – what aspects of the service are important, whether residents see value in the service provided and what is the likely trend over time given current funding levels.

Council expressed the following strategic priority:

As a growing community, it is critical that we provide essential services to our residents and businesses to ensure their well-being and contribute to the overall quality of life in our city. Our current core services include everything from public safety, transportation, and waste management to parks, recreation, and community development. Over this term Council will ensure the City plans, maintains, and grows these services as our population grows while ensuring we are fiscally responsible and responsive to the evolving needs of our community.

This update highlights investment required over the next twenty years to continue providing services at the current level. It also considers major investments such as a new fire station, community centre and operations yard (NOC), needed to sustain existing levels of service as the community grows.

The update considers both existing aging infrastructure such as underground pipes, roads and playgrounds that deteriorate with age and require ongoing renewal, and new infrastructure that allows the community to continue to enjoy services into the future.

The investment needed to maintain existing assets combined with the ongoing needs of a growing community, both physical and in terms of liveability, can be significant. Without the required level of investment, it is very difficult for the level of service provided by the City to remain the same.

The Asset Management Plan Update provides a brief description of levels of service by infrastructure type. Future updates will expand on the levels of service to improve understanding of how funds are invested.

Levels of service highlights:

Drinking Water

- Provide drinking water in a cost-efficient manner.
- The water system supports community fire protection.
- The water system provides safe potable drinking water of high quality.
- Drinking water infrastructure is reliable with minimal interruptions.
- The water service is delivered considering the needs of the environment and all users.

Sanitary Sewer

- Provide wastewater services with minimal disruption or backup.
- Ensure sufficient capacity for ongoing growth.
- Protect environment through prevention of overflows.

Drainage (Rainwater)

- Ensure minimal impact to the community from flooding or creek overflows.
- The rainwater service protects the environment by retaining peak runoff and considers habitat.
- The rainwater service relies upon natural assets such as ponds, streams, and wetlands to help with runoff quality and quantity.

Transportation

- Provide a transportation network with a suitable level of connectivity.
- Provide an operational road network that is safe and accessible for drivers, pedestrians, and cyclists.
- Provide an efficient transportation network for all modes.
- Support mode shift from motor vehicle trips to active transportation.
- Ensure investment in asphalt infrastructure is sustainable.

Solid Waste

- Provide reliable solid waste collection services.
- Support diversion.

Parks Amenities

- Provide park services in a cost-effective manner.
- Ensure parks are safe and accessible for visitors and encourage activity and outdoor recreation.
- Provide park services that are energy efficient, protect biodiversity and have opportunity for environmental stewardship.
- Provide amenities that support community groups, sports leagues, and tourism.
- Parks and natural areas have urban forests (including street trees) managed in a safe and sustainable manner.

Recreation Service

- Provide recreation services (arenas, aquatics, children’s programs, community centers, leisure programs, sport services) in a cost-effective manner.
- Provide recreation services in a reliable manner.

Facilities – Corporate and Cultural

- Ensure facilities are safe, efficient and in acceptable condition.
- Ensure facilities are energy efficient and support the environment.
- Provide facilities in support of recreation, fire, police, and operational services.

Fleet

- Provide reliable, safe, and fit-for-purpose vehicles.
- Provide vehicles with minimal greenhouse gas emissions.



Information Technology

- Provide IT services in a cost-efficient and reliable manner.
- Develop, implement, and support enterprise-class software systems for all organizational functions.
- Continually improve the performance, reliability and security of the City’s broadband network.
- Provide responsive support to resolve all technical issues or performance degradation with staff workstations and organization software systems.
- Partner with departments to identify and deliver innovative technical solutions that improve and expand the services to all residents.



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20 Year Investment Plan Update

20 Year Investment Plan Update

The 20 Year Investment Plan has been updated for attention directing purposes and to allow Council to review and make decisions. Projected investment over the next twenty years is \$2.6 billion and current funding strategies may provide \$1.6 billion. Strategies have been identified to help address the projected funding shortfall of approximately \$1.0 billion. The projected shortfall includes \$74.9 million in DCC contributions for new/upgraded infrastructure. Completion of a new DCC bylaw may address this shortfall.

Components of the 20 Year Investment Plan

1. New/upgraded infrastructure investment identified in the current DCC Bylaw.
2. 2023 – 2027 Financial Plan
 - a. Priority infrastructure renewal projects, and annual renewal programs.
 - b. Priority DCC projects.
 - c. Priority new/upgraded infrastructure.
 - d. Strategic initiatives, programs and projects including property acquisition, Commercial Street Implementation Plan, and sustainability projects.
3. 2023 – 2032 Departmental Project Plans
 - a. Priority infrastructure renewal projects.
 - b. Priority DCC projects.
 - c. Priority new/upgraded infrastructure.
 - d. Strategic initiatives, programs and projects including property acquisition, Commercial Street Implementation Plan, and sustainability projects.
 - e. Projects where further investigation is ongoing/required.
4. Recurring initiatives, programs and projects that are anticipated to continue in 2033–2042.
5. Major Capital Projects Under Development – including Nanaimo Operations Centre (NOC), 89 Prideaux (Parks Yard), RCMP Detachment

Expansion, Waterfront Walkway: Departure Bay Section, South End Community Centre, Major Recreation Centre Renovations and a fifth Fire Station.

6. Infrastructure Lifecycle Plans.

Key Assumptions

Capital Grants: The funding strategy does not include any potential conditional grants awarded by senior levels of government. However, it does assume the continuation of unconditional Community Works Fund (Federal Gas Tax payments) at current levels and any confirmed grants. Discontinuation of the Community Works Fund as an unconditional grant or reduction in grant amount could materially impact the modelling.

Debt: The funding strategy includes only internal borrowing and external borrowing currently part of the 2023 – 2027 Financial Plan. Fire Station #1 debt servicing is funded and will continue to be funded from the General Asset Management Reserve Fund. All other current debt is funded from general revenue (property taxation) or user fees.

Inflation: Projects included in the 2023 – 2027 Financial Plan, 2023 – 2032 Departmental Project Plans or major capital projects under development were included in the 20 Year Investment Plan at the current projected cost. Projects added to the 20 Year Investment Plan that were not included in these plans were inflated at two per cent per year based on year of costing. This is a key change from the previous update which did not include an adjustment for inflation. Two per cent inflation was chosen based on the Bank of Canada's inflation-control target to keep total Consumer Price Index (CPI) inflation at the two per cent midpoint of the target range of one per cent to three per cent over the medium term. The Engineering News-Record publishes a Construction Cost Index (CCI) similar to the CPI but for building and construction costs, this index has been higher than CPI.

Minimum Reserve Balance: The City's Reserve Policy has minimum and maximum reserve balance requirements for specific reserves. Current funding

strategies for the 20 Year Investment Plan assume that the current minimum reserve balance requirement is maintained for all applicable reserves.

Private Contributions: The funding strategy includes private contributions anticipated as part of the 10 Year Project Plan and private contributions (cost shares) anticipated for DCC projects. Changes to anticipated private contribution amounts could impact scope and/or timing of projects if the project is contingent on contribution.

Service Continuity: It was assumed that the City wants to continue with current services and service levels. The City may choose not to replace some of its capital or reduce/increase services. Such decisions could materially impact the modelling.

Current Funding Strategies

The City maintains reserves that fund the majority of annual investment plans. Annual contributions to these reserves are from general revenue, user fees, DCCs, and senior government grant programs and reflect the City's current funding strategies.

Current funding strategies in the 20 Year Investment Plan include:

- Base project funding from general revenue (property taxes) of \$8.0 million in 2023, increasing by five per cent per year in subsequent years.
- One per cent annual increase to property taxes for contribution to the General Asset Management Reserve Fund up to 2023 (Appendix A).
- Two per cent annual increases to sewer user fees for contribution to the Sewer Asset Management Reserve Fund up to and including 2032 as per the Utility Rate Review.
- Two per cent annual increases to water user fees up to and including 2026, then one per cent annual increases for contribution to the Water Asset Management Reserve Fund up to and including 2032 as per the Utility Rate Review.

- Contributions to specific reserves for Sanitation Cart Replacement, Copier/Photocopier Replacement, Climate Projects, IT, Equipment Replacement (Fleet), Parking, and Facility Development (Parks and Recreation).
- Current DCC bylaw rates and contribution levels to DCC reserves.
- Continuation of the Community Works Fund at current funding levels.
- Approximately \$20.4 million in private contributions (cost shares) for DCC transportation projects.

The Strategic Infrastructure Reserve Fund has only been used as a funding source for projects previously approved by Council to receive funding from this reserve, including the Harewood Centennial Artificial Turf Fields, Albert & Fourth Complete Street Ph 2 and annual funding for pedestrian improvements and property purchases.

In March 2023, the City received \$16,088,000 from the Province of BC under the Growing Communities Fund. This funding has not been used as a funding source as allocation of these funds will be directed by Council, the only exception is \$3.0 million allocated by Council to the Harewood Centennial Artificial Turf Fields project.

Borrowing can be used to 'spread' funding needs over a longer time period where appropriate. Debt has not been included in current funding strategies except for borrowing approved in the 2023 – 2027 Financial Plan. A separate model exists for funding major projects under development using borrowing.

Long-Term Planning Purpose and Risks

Significant diligence, collaboration and collection of the best available information is used to develop long-term plans. The purpose of long-term plans is attention directing, and to identify significant issues and allow time to develop and implement strategies. Variables that impact long-term plans are:

- Changes to service life or remaining service life assumptions;

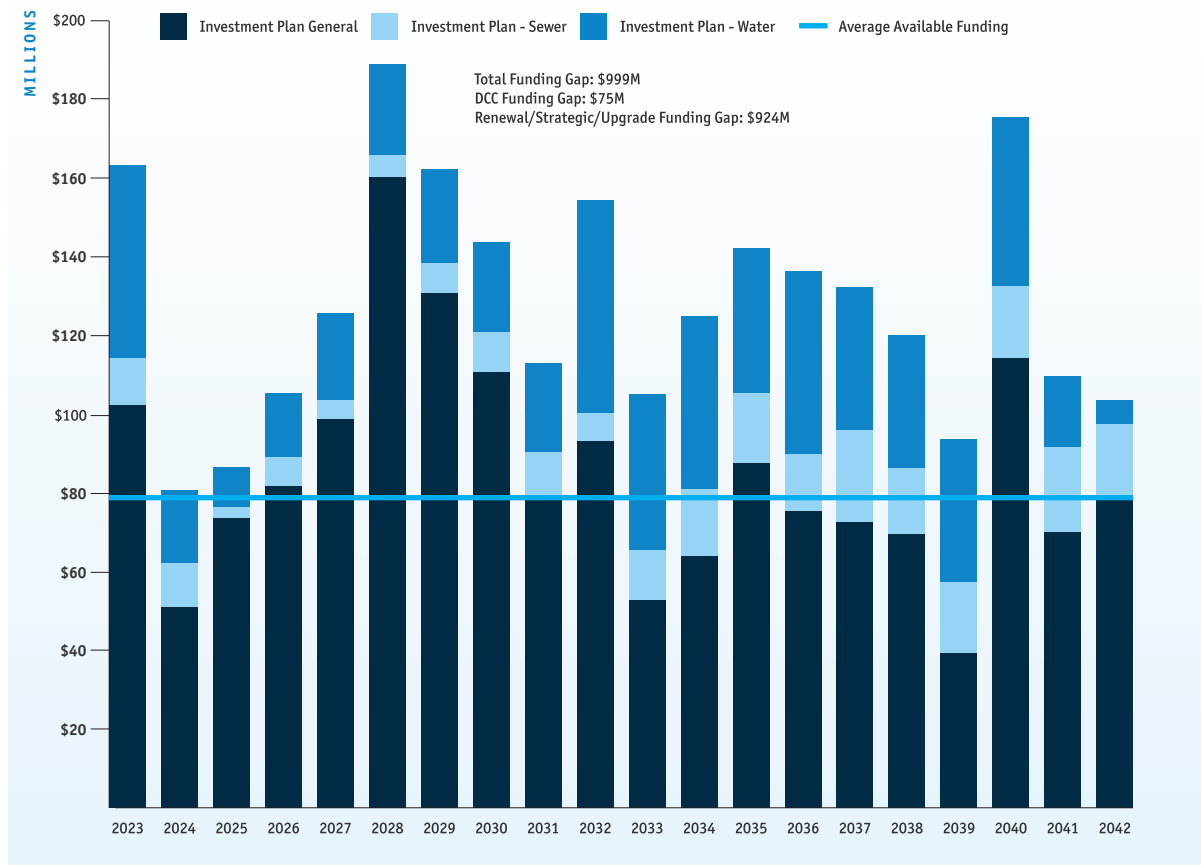
- Changes to timing and cost estimates;
- Changes to levels of service;
- New services or reductions in service;
- Changes to regulatory requirements;
- Unplanned liabilities which may impact contributions or require an unplanned allocation from reserves; and
- Inflation.

As early planning processes advance to detailed design, tender, and construction phases, changes in cost estimates may be realized. As well, significant constraints both external and internal may impact the ability of the City to execute its investment plans. These constraints may include financial, political, economic, social, technical, environmental, and legal.

Major Capital Projects Under Development

The City currently has several major capital projects under development; Nanaimo Operations Centre, 89 Prideaux (Parks Yard), RCMP Detachment Expansion, Waterfront Walkway: Departure Bay Section, South End Community Centre, and a fifth Fire Station. It is also anticipated that a major recreation facility renovation will be required in the next ten years. These projects have been included in the 20 Year Investment Plan based on current cost estimates and preliminary timing. The timing and costs are still subject to change as plans are refined.

20 Year Investment Plan



20 Year Investment Plan Analysis

The twenty year projected required investment is \$2.6 billion. Current funding strategies may provide up to \$1.6 billion. The projected deficit is \$999.1 million. This deficit is divided between \$924.1 million for strategic priorities, annual programs, and renewal of current infrastructure, and \$74.9 million for new/upgraded infrastructure required for growth.

Summary Analysis

Projected Investment	20 Year Total	%
General	1,714,326,281	67%
Sanitary Sewer	257,770,130	10%
Water	602,516,034	23%
	2,574,612,445	100%

Current Funding Strategies	20 Year Total	%
General	962,774,748	61%
Sanitary Sewer	177,919,615	11%
Water	434,867,254	28%
	1,575,561,617	100%

Projected Funding Shortfall	20 Year Total	%
General	(751,551,533)	75%
Sanitary Sewer	(79,850,515)	8%
Water	(167,648,780)	17%
	(999,050,828)	100%

20 Year Total Project Funding Excess/(Shortfall)	Total	DCC	Renewal/Upgrade/Strategic
General	(751,551,533)	(84,938,664)	(666,612,869)
Sanitary Sewer	(79,850,515)	(22,954,050)	(56,896,465)
Water	(167,648,780)	32,956,278	(200,605,058)
	(999,050,828)	(74,936,436)	(924,114,392)

General includes Drainage, Fleet, Facilities, IT, Parks, Transportation, Strategic Initiatives



The funding gaps are unique to each fund: general, sewer and water. It is important to also consider the need to maintain reasonable reserve balances to support the organization's financial resiliency and ability to respond to unexpected changes in investment timing or costs. Changes can occur due to early infrastructure failure, and cost estimates cannot be finalized until the detailed design and tender phases of each project are complete.

General Fund

- Projected shortfall is \$751.6 million which includes \$84.9 million for DCC contributions.
- Funding gap is most significant in first ten years of plan due to major capital projects currently under development.
- Projects in the 20 Year Investment Plan include major capital projects under development currently estimated at \$428.5 million.
- The current 2023-2027 Financial Plan includes new short-term borrowing for one property purchase project with repayment from general revenue and new equipment financing for three refuse trucks funded from sanitation user fees.

Sewer Fund

- Projected shortfall is \$79.9 million which includes \$23.0 million for DCC contributions.

- The funding gap is most significant in last ten years of plan.
- The current 2023 – 2027 Financial Plan includes new internal borrowing for two DCC projects with repayment currently from sewer operations. Sewer DCC's are currently unable to respond to the pattern of growth; one strategy may be to focus growth in areas with existing capacity.

Water Fund

- Projected shortfall is \$167.6 million which includes \$11.7 million for Water Distribution DCC contributions.
- The Water Supply DCC Dam project is outside the twenty year investment plan time frame.
- Funding gap is most significant in last ten years of the plan.
- A number of significant projects are still subject to cost estimate and timing changes. These projects include the city-wide water meter replacement project, seismic upgrades for the South Fork Dam, and a secondary intake to the Control Building. Borrowing may be required to fund some of these projects.

Strategies to Reduce the Funding Gap

To address the funding needs, Council may consider strategies to reduce the gap between required funding and available funding. Recommendations include:

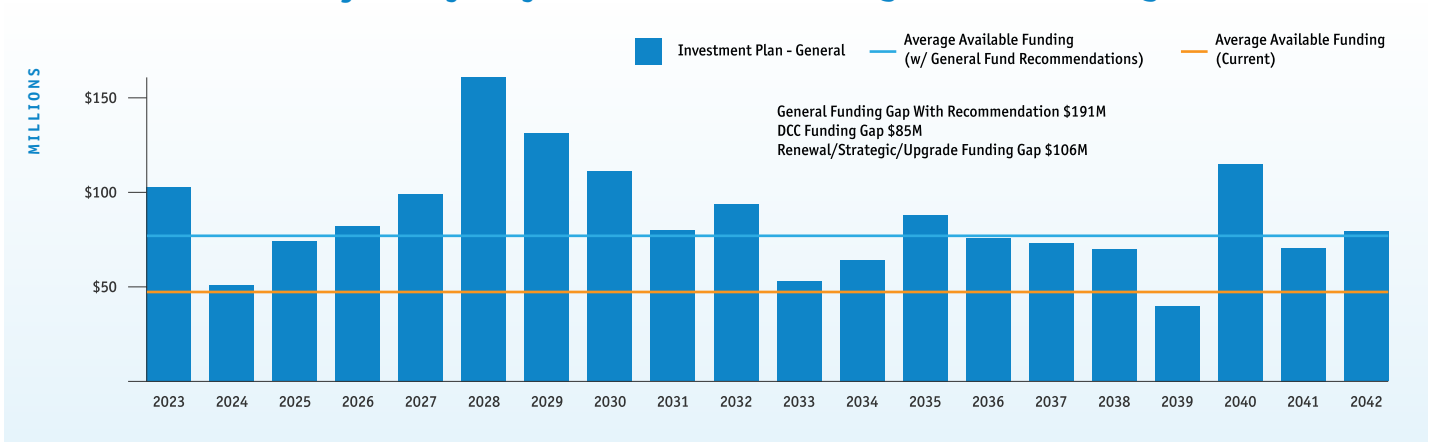
- Continue the annual one per cent increases to property taxes for contribution to the General Asset Management Reserve Fund for the next five years (2024-2028) or until the next update and recommendations have been presented to Council;
- That the planned decrease in 2027 from two per cent to one per cent in the annual increases to water user fees for contribution to the Water Asset Management Reserve Fund be delayed until the next update and recommendations have been presented to Council;

- Complete the 2023 DCC review and adopt a new DCC bylaw;
- Fund the major capital projects under development from borrowing subject to Council and electoral approval;
- Decommission or remove infrastructure no longer serving its purpose; and
- Implement improvements to the City’s AM System:
 - a. Continue to develop levels of service.
 - b. Continued implementation and development of Cartegraph, a corporate asset management system (CAMS) software that will map, track, and manage the City’s assets and aid future decision making.

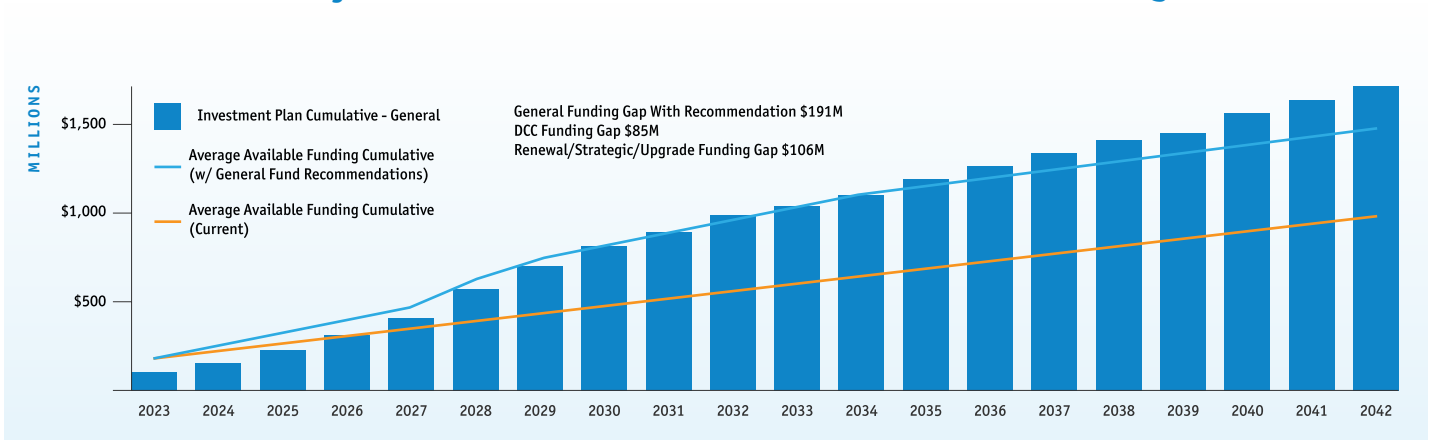
Projected Impact to General Fund

Continuation of the one per cent annual increases to property taxes for contribution to the General Asset Management Reserve Fund up to and including 2028 and funding the major capital projects under development from borrowing is anticipated to reduce the General Fund gap from \$751.6 million to \$191.3 million. This includes \$84.9 million for DCC contributions. Debt servicing costs for new borrowing are assumed to be funded from general revenue.

Projected yearly investment and average annual funding:



Projected cumulative investment and cumulative funding:





Asset Management Plan Update

Asset Management Plan Update

The City provides a wide range of services to the community that requires stewardship of a diverse group of assets. These assets provide needed and desired services to support the economic, environmental and social well-being of the community.

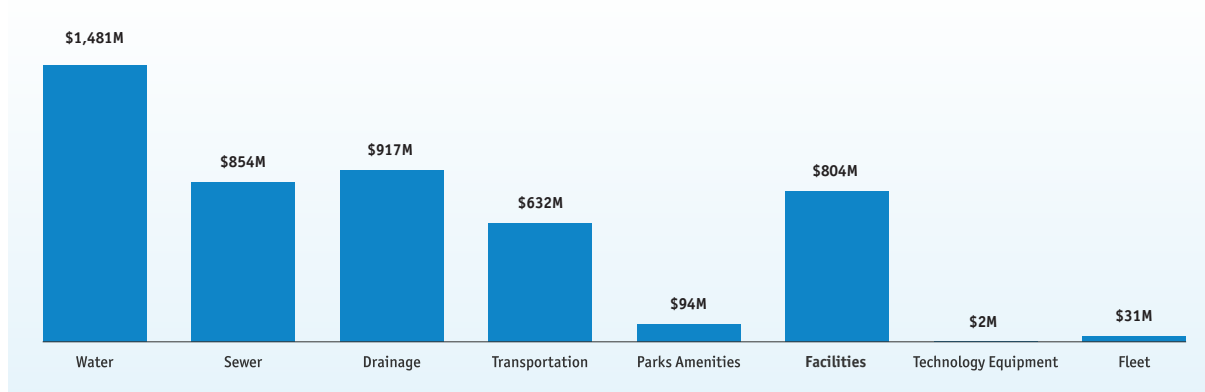
The City currently owns and operates infrastructure assets with an estimated replacement cost of \$4.8 billion (2021) that support provision of police and fire protection, transportation, drainage, water, sewer, parks, recreation, and cultural services.

The Asset Management Plan Update includes renewal of current infrastructure.

The table below provides an overview of key asset types.



Infrastructure	Description	Replacement Cost – \$M	Percentage
Water Utility	Water supply dams, water treatment plant, reservoirs, mains, control stations, fill stations	1,481	30.8%
Sewer Utility	Mains, lift stations and forcemains	854	17.7%
Drainage	Mains	917	19.1%
Transportation	Roads, bridges, retaining walls, sidewalks, traffic signals, street lighting	632	13.1%
Parks Amenities	Playfields, playgrounds, trails, recreational dams	94	2.0%
Facilities	Civic offices, public works yards, fire and police buildings, parkades, rec. and cultural buildings	804	16.7%
IT Equipment	Fibre optic network, major IT infrastructure	2	0.0%
Fleet	Cars, pickups, heavy equipment, sanitation equipment, fire apparatus, ice resurfacers	31	0.6%
Total		4,815	100.0%



Why Asset Management?

A municipality’s asset management responsibilities are included in the Community Charter:

“The purposes of a municipality include.... (c) providing for stewardship of the public assets of its community.”

The required changes in financial reporting for municipalities in 2008 brought attention to aging infrastructure, and the challenges facing local governments in funding operations, renewals, and growth of their infrastructure. AM principles and practices were developed to help local governments face these challenges.

Asset Management BC developed the Asset Management BC Framework (Framework) based on international best practices for a municipal approach to Asset Management:

“Sustainable Service Delivery ensures that current community service needs, and how those services are delivered (in a socially, economically and environmentally responsible manner), do not compromise the ability of future generations to meet their own needs. Communities build and maintain infrastructure to provide services. These services support our quality of life, protect our health and safety, and promote social, economic, and environmental well-being. Failure to care for our infrastructure, manage our natural resources, and protect the benefits provided by nature risks degrading, or even losing, the services communities enjoy, and that future generations may rely on.

Sound asset management practices support Sustainable Service Delivery by considering community priorities, informed by an understanding of the trade-offs between the available resources, and the desired services.

The Framework establishes a high-level, systematic approach that supports local governments in moving toward service, asset and financial sustainability through an asset management process.

The Framework addresses:

- Why asset management is necessary
- What asset management is
- How it can be implemented

The Framework recognizes there are many components within the asset management process and provides a circular, continuous pathway to link all components of the process together.”

ASSET MANAGEMENT BC

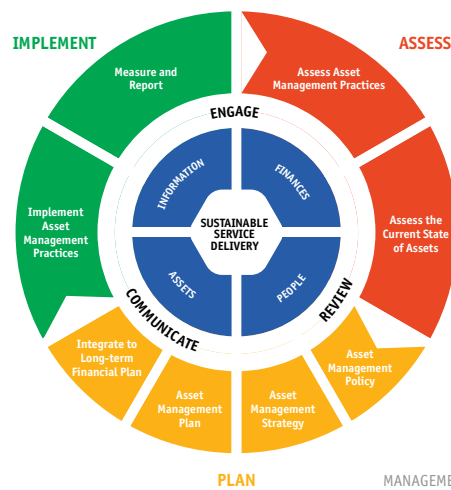


FIGURE 1: ASSET MANAGEMENT BC FRAMEWORK

The City has completed significant work in developing its AM system and continues to improve collaboration, processes and information to support Council’s decision making. This is the fourth Asset Management Plan being brought forward to Council.

Council has confirmed its support for the City’s AM system through:

- Approving creation of three asset management reserve funds in 2013 and annual contributions to those reserves through increases to property taxes and sewer and water user fees;
- Supporting the implementation and development of a corporate asset management system software; and
- Adoption of an Asset Management Policy and endorsement of the Strategic Asset Management Plan.

Asset Management Policy (AM Policy) and Strategic Asset Management Plan (SAMP)

The City's AM Policy is the foundation of its AM practices. The policy supports meeting the community's expectations, ensuring the long-term health of the City's infrastructure, and meeting the needs of future generations.

The SAMP is a living document intended to be a staff guide on how to ensure effective adherence to the policy.

The main aspects of the AM Policy include:

- Description of the City's commitment and accountability with key roles and responsibilities of Council, CAO and Staff.
- Direction to align with existing corporate strategy, business planning, and budget management systems already in place.
- Requirement for the City to sustainably manage assets that meet the anticipated challenges of the community's expectation, legislative requirements, climate change impacts, and needs of future generation.



Asset Management Steering Committee

The City's Asset Management Steering Committee continues to lead and coordinate ongoing improvements to the organization's AM capabilities and competencies. The Committee has representation from across the organization including Engineering, Development, Facilities, Finance, Park Operations, and Public Works. Members of the Committee lead specific initiatives such as review and updating infrastructure lifecycle planning models, participation in senior government programs, and implementation of AM process and information improvements.

To date, the City's AM activities have been primarily focused on:

- Development of organizational knowledge and capacity;
- Development and maintenance of long-term asset management plans including renewal of current infrastructure and new/upgraded infrastructure required due to growth;
- Integrating asset management in strategic planning;
- Implementation and development of a corporate asset management system software; and
- Participation in provincial and national asset management programs.

Key Assumptions

Climate Change: This update considered the direct financial impacts of infrastructure requirements and did not specifically examine or quantify the financial risk or impact of climate change to the City's infrastructure or private property. See Appendix B for a listing of impacts to the City's infrastructure that is considered in capital planning and design.

Inflation: The plans have been prepared using 2021 values. No inflationary factor has been applied to forecasted replacement costs in these models.

Infrastructure Replacement Standards: The plans have been prepared with the assumption that infrastructure will be replaced at the same standard that currently exists. Replacing to the same standard is not always possible due to new regulations, codes, or community expectation. The plans do not account for changes in standards that may occur.

Replacement Cost Accuracy: Costing is based on 2021 values. Unit rates were developed to estimate overall replacement costs. No Class-D or above construction estimates have been prepared. Spending forecasts demonstrate an overall funding level likely needed to support the ongoing replacement of existing infrastructure.

Service Continuity: It was assumed that the City would want to continue with the current services and service levels. The City may choose not to replace some of its infrastructure or reduce/increase services. Such decisions could materially impact plans.

Service Lives: The plans use condition information, where available, to estimate remaining service life. Where condition information is not available remaining service life is estimated based on City experience and/or industry standard based on material type and in-service date.





Infrastructure Overview

The City has developed asset management plans for each of the City's asset types (e.g., facilities, roads, drainage, sewer, water). The plans focus on renewal of current infrastructure include timing and costs over the lifecycle of each asset type.

Starting in 2021, cross functional teams began updating the detailed asset management plans for all of the City's major asset types. Progress was delayed due to the ongoing impacts of the COVID-19 Pandemic. The work required reviewing and updating complex models with:

- Current inventory and condition data;
- Key assumptions for service life or remaining service life; and
- Projected infrastructure replacement timing and cost estimates.

The asset management update includes long-term infrastructure investment plans for:

- Renewal of current infrastructure; and
- Does not include inflation.

City Infrastructure

The following sections provide updated information on each of the City's infrastructure types:

- Water Utility Infrastructure
- Sewer Utility Infrastructure
- General Fund
 - a. Transportation
 - b. Drainage
 - c. Parks Amenities
 - d. Facilities
 - e. Information Technology
 - f. Fleet

Water Utility Infrastructure

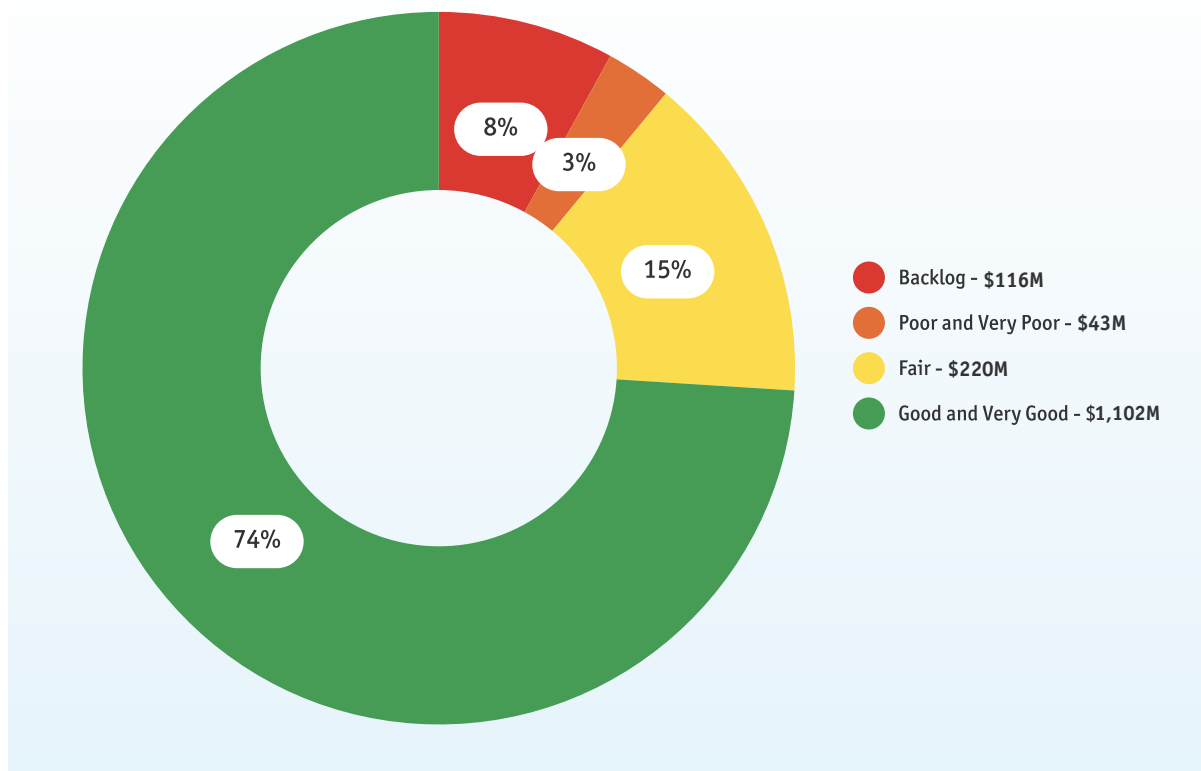
With minimal service disruption, the City provides water that is clean and safe to drink and satisfies all anticipated consumption and fire protection needs. The water utility is self funded through user fees which provide funding for annual operating and maintenance activities and for the infrastructure renewal program. In addition, development cost charges are collected from developers that provide funding for new/upgraded infrastructure required for growth.

The City’s water system includes two water supply dams, ten reservoirs, support facilities (pump/pressure reducing control stations), water treatment plant, two water filling stations, and almost 650 kilometers of supply and distribution mains and supplies 14.8 billion litres of treated water per year.

Department documents and processes are maintained to provide information on all infrastructure assets. Detailed information for mains including, location, material type and in-service year are maintained in the City’s GIS system. Engineering drawings, often referred to as ‘as built’ drawings, are completed after construction of all water infrastructure and are the primary source of asset information.

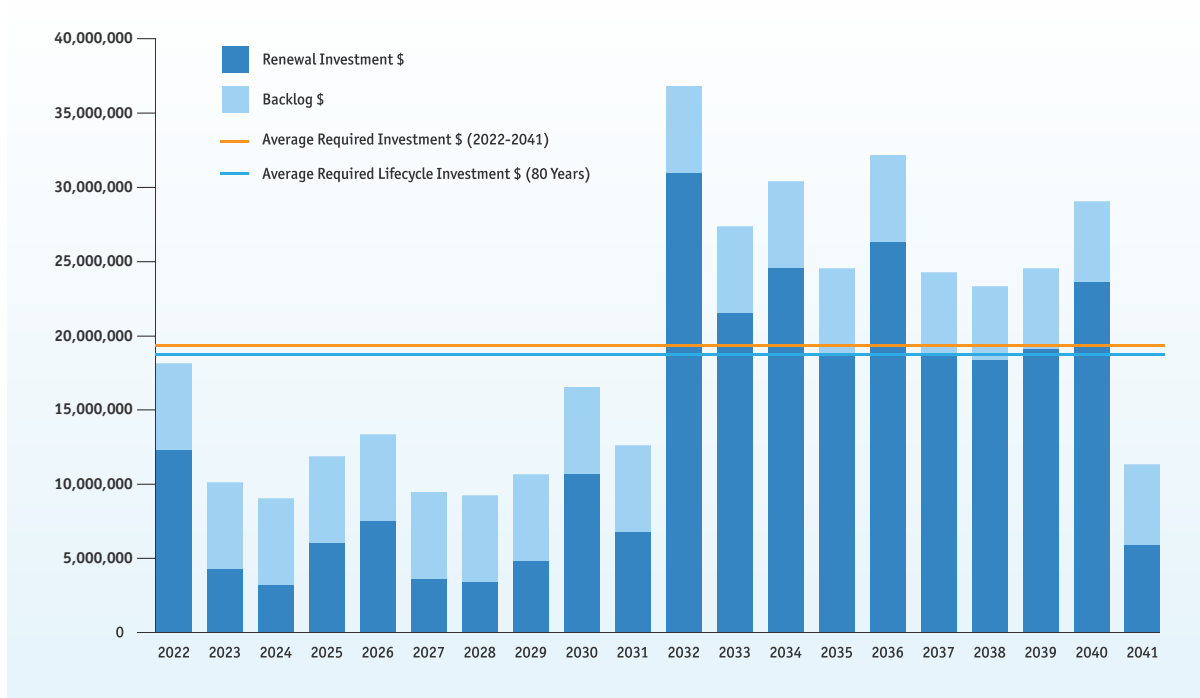
The City’s water treatment plant became operational in late 2015. The service life of facilities is estimated at 65 years however the water treatment plant includes specialized equipment including membranes, chlorine ejector pumps, strainers etc. which have varying service lives.

Water Infrastructure Current Condition



Condition of current infrastructure only, does not include capacity.

Water Infrastructure 20 Year Asset Management Plan: Renewal



The graph is generated from the City's asset renewal models based on 2021 costing. Projected investment will not be the same as the City's approved Financial Plan, the department's 10 Year Project Plan or the 20 Investment Plan due to project costing, project prioritization, resource and funding constraints.

Water Infrastructure Service Life and Current Age

Infrastructure Type	Expected Service Life – City	Current Age (yrs) *	Measurement
PRV/Altitude Value Stations - 6	40-80 years depending on component	20.7	average age (stations)
Pump Stations - 7	25-80 years depending on component	15.3	average age (stations)
Reservoirs - 10	65 years	30.8	average age (reservoirs)
Water Distribution Mains - 551 kms	40-85 years depending on material	27.0	weighted average age (lm)
Water Filling Stations - 2	25-80 years depending on component	2.0	actual age (station)
Water Supply Dams - 2	80 years, 130 years	47, 91	actual age
Water Supply Mains - 96 kms	40-83 years depending on material	45.4	weighted average age (lm)

*Inventory age in 2021

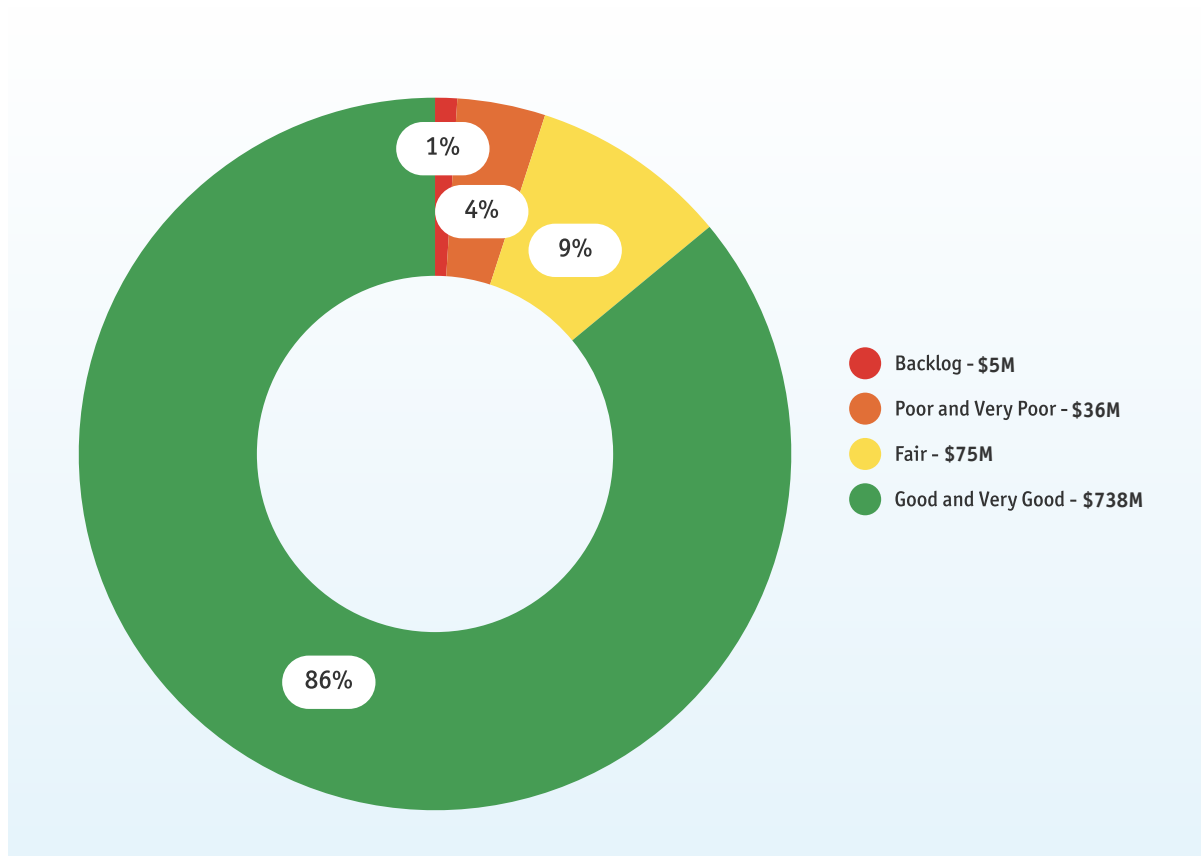
Sanitary Sewer Utility Infrastructure

With minimal service disruption and impact to the environment and property, the City provides sanitary sewer services that maintain public health and safety. The City works closely with the Regional District of Nanaimo who operate the Greater Nanaimo Pollution Control Centre, treating sewage to a secondary level before discharge into the ocean. The sanitary sewer utility is self funded through user fees which provide funding for annual operations and maintenance activities and for the infrastructure renewal program. In addition, development cost charges are collected from developers that provide funding for new/ upgraded infrastructure required for growth.

The City’s sanitary sewer system is made up of mains and support facilities (lift stations). There are over 575 kilometers of sewer mains.

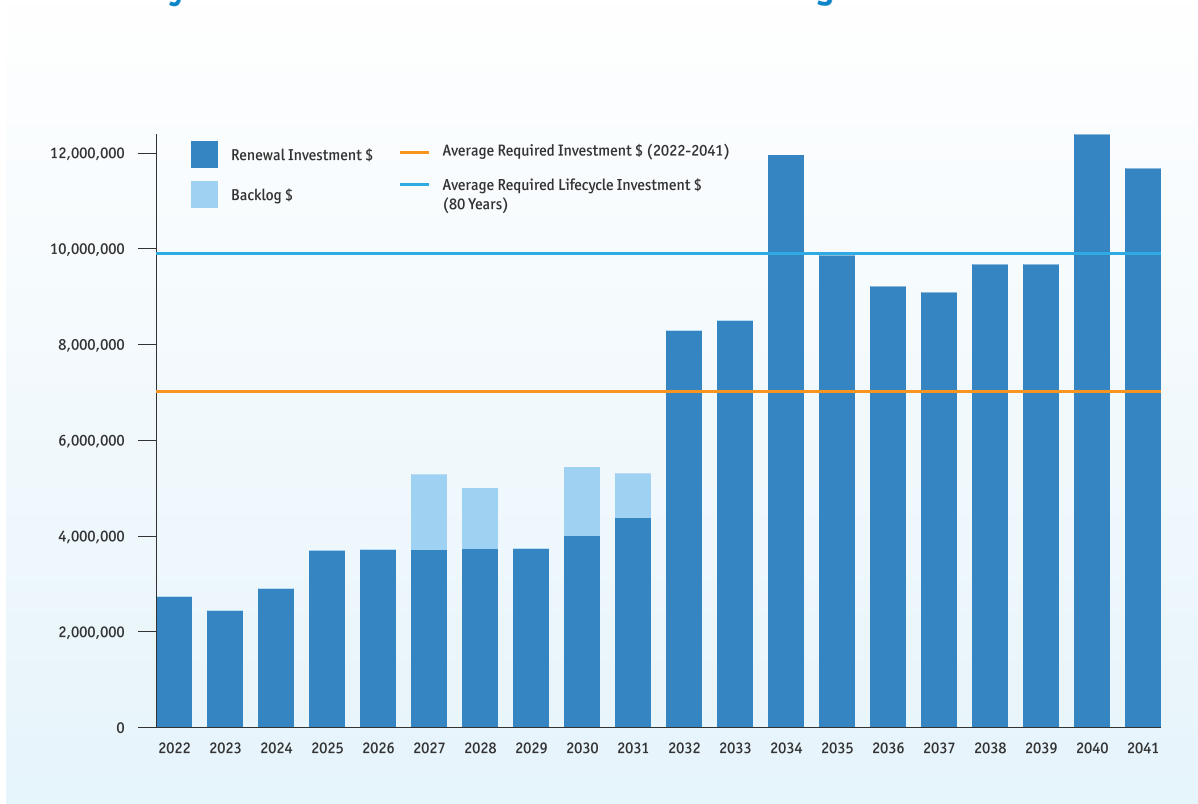
Department documents and processes are maintained to provide information on all infrastructure assets. Detailed information for mains including, location, material type, and in-service year are maintained in the City’s GIS system. Engineering drawings, often referred to as ‘as built’ drawings, are completed after construction of all sewer infrastructure and are the primary source of asset information.

Sanitary Sewer Infrastructure Current Condition



Condition of current infrastructure only, does not include capacity.

Sanitary Sewer Infrastructure 20 Year Asset Management Plan: Renewal



The graph is generated from the City’s asset renewal models based on 2021 costing. Projected investment will not be the same as the City’s approved Financial Plan, the department’s 10 Year Project Plan or the 20 Investment Plan due to project costing, project prioritization, resource and funding constraints.

Sanitary Sewer Infrastructure Service Life and Current Age

Infrastructure Type	Expected Service Life – City	Current Age (yrs) *	Measurement
Force Mains (no lift station) - 11 kms	60-80 years depending on material	24.1	weighted average age (lm)
Life Station and Force Main - 16	50 years	37.3	average age (stations)
Sewer Mains - 576 kms	50-100 years depending on material	36.7	weighted average age (lm)

*Inventory age in 2021

General Fund

Excluding the Water and Sanitary Sewer Utilities, all other City services are primarily funded by property taxes. User fees are charged for some services including parks and recreation, solid waste collection, and development services. In addition, development cost charges are collected from developers that provide funding for new/upgraded transportation, drainage and parks infrastructure required for growth.

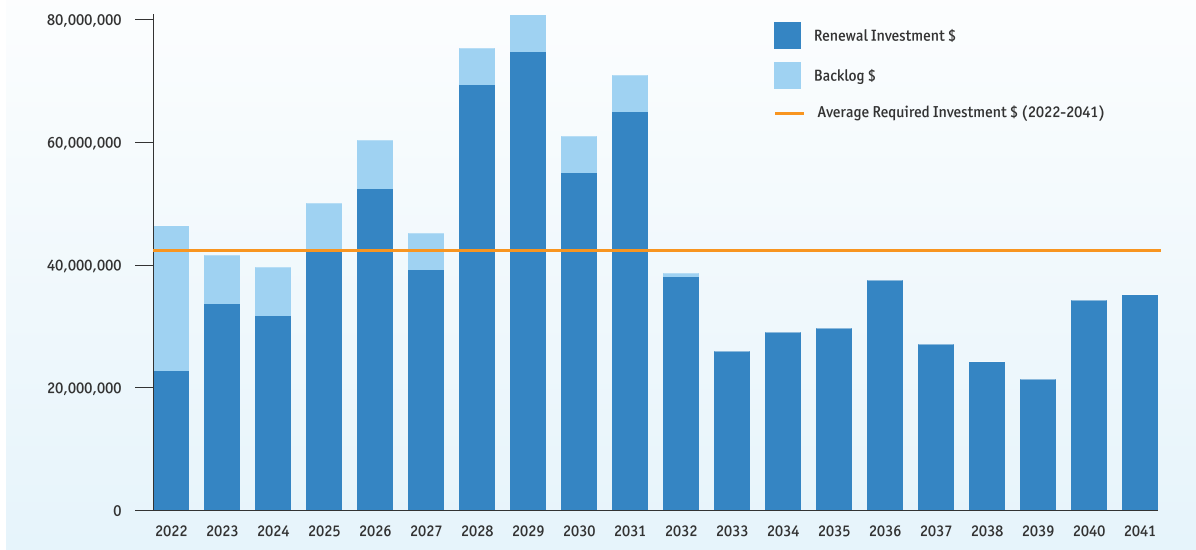
General Fund long-term infrastructure planning includes the following assets:

- Transportation
- Drainage
- Parks Amenities
- Facilities
- Information Technology
- Fleet

A summary of long-term planning for the General Fund is followed by sections for each of the above-noted assets.



General Fund 20 Year Asset Management Plan: Renewal



The graph is generated from the City's asset renewal models based on 2021 costing. Projected investment will not be the same as the City's approved Financial Plan, the department's 10 Year Project Plan or the 20 Investment Plan due to project costing, project prioritization, resource and funding constraints.

Transportation

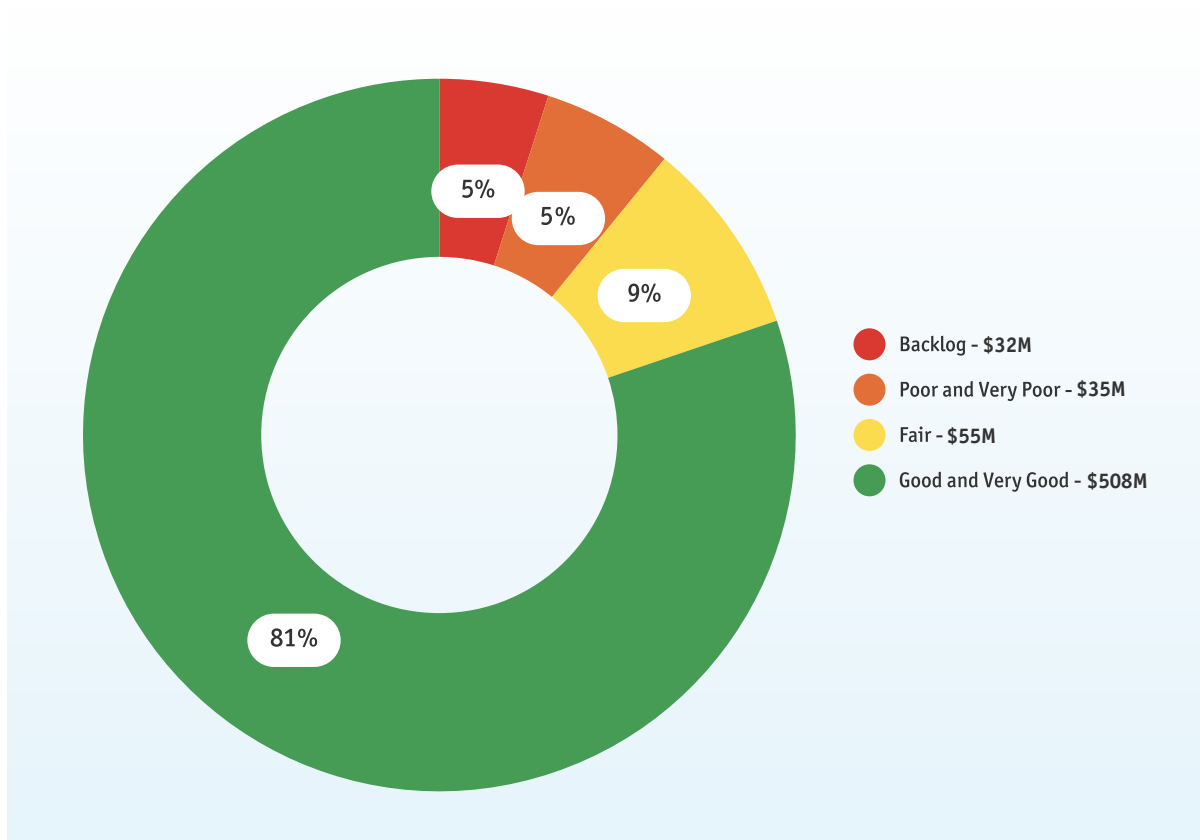
Apart from the Provincial Highway 19 and Trans-Canada Highway 1, the City owns and maintains its road network and provides a multi-modal network that enhances safety and supports the sustainable movement of people and the goods they need, across our community and region.

The City’s transportation system includes more than 500 kms of roads, 17 bridges, 51 traffic signals, retaining walls, streetlights, signage and pedestrian and cycling facilities.

Detailed asset information for transportation infrastructure is maintained in the City’s GIS system.

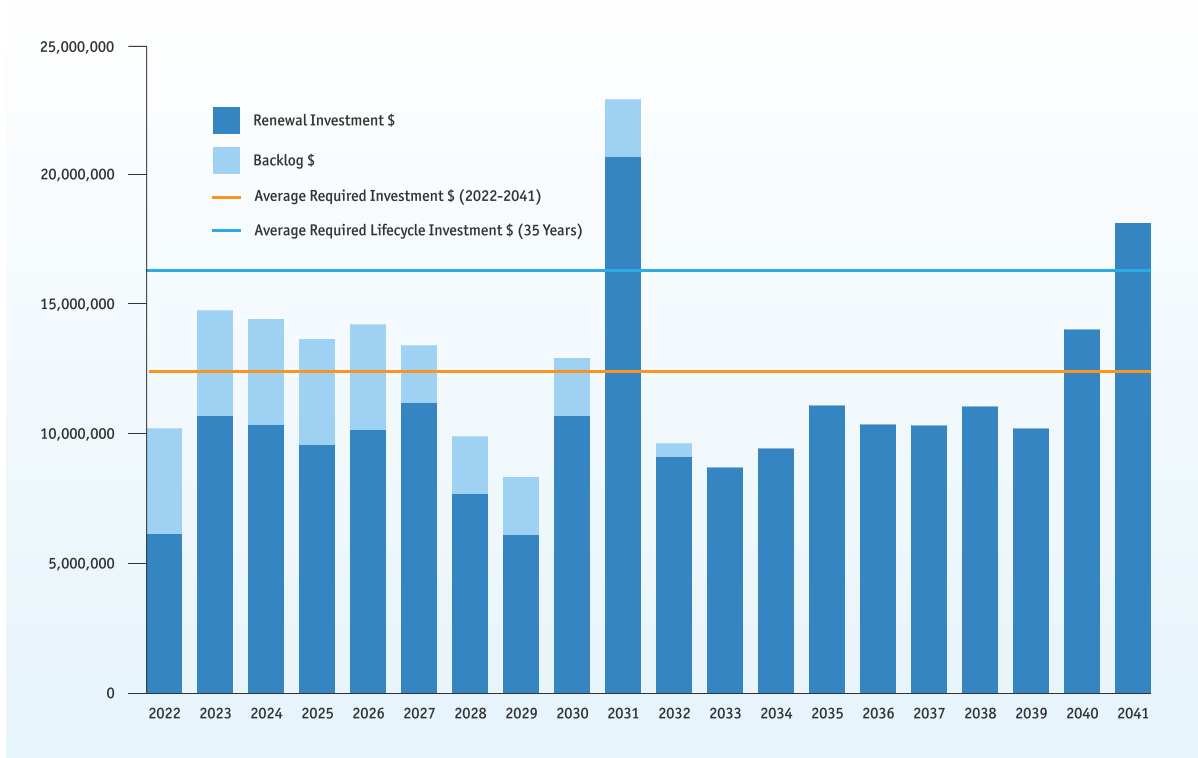
Road inventory information is also maintained in the City’s pavement management system (PMS). A road condition survey is completed every three to five years that provides updated information to the PMS. The pavement quality index (PQI) is a numerical index between 0 and 100, which is used to indicate the general condition of a pavement section, with higher values indicating better conditions. The 2021 network PQI was 72.5 extrapolated using 2017 road condition survey data. A new road condition survey is in progress and will provide updated information later in 2023. Department documents are also maintained to provide additional information on bridges, sidewalks, traffic signals, and street lighting.

Transportation Infrastructure Current Condition



Condition of current infrastructure only, does not include capacity. Excludes \$2.0 million in retaining walls due to insufficient inventory information.

Transportation Infrastructure 20 Year Asset Management Plan: Renewal



The graph is generated from the City's asset renewal models based on 2021 costing. Projected investment will not be the same as the City's approved Financial Plan, the department's 10 Year Project Plan or the 20 Investment Plan due to project costing, project prioritization, resource and funding constraints.

Transportation Infrastructure Service Life and Current Age

Infrastructure Type	Expected Service Life – City	Current Age (yrs) *	Measurement
Bridges - 17	50-75 years depending on structure	31.8	average age
Retaining Walls - 10,508 m ²	30-60 years depending on material	21.2	weighted average age (area)
Roads - 517 kms	25-40 years depending on type	21.9	weighted average remaining service life (lm) – PQI - 72.5
Sidewalks - 377 kms	20-70 years depending on material	58.9	weighted average age (lm)
Streetlights - 4,604	30 years	21.0	average age
Traffic Signals - 51	30 years	23.5	average age

*Inventory age in 2021

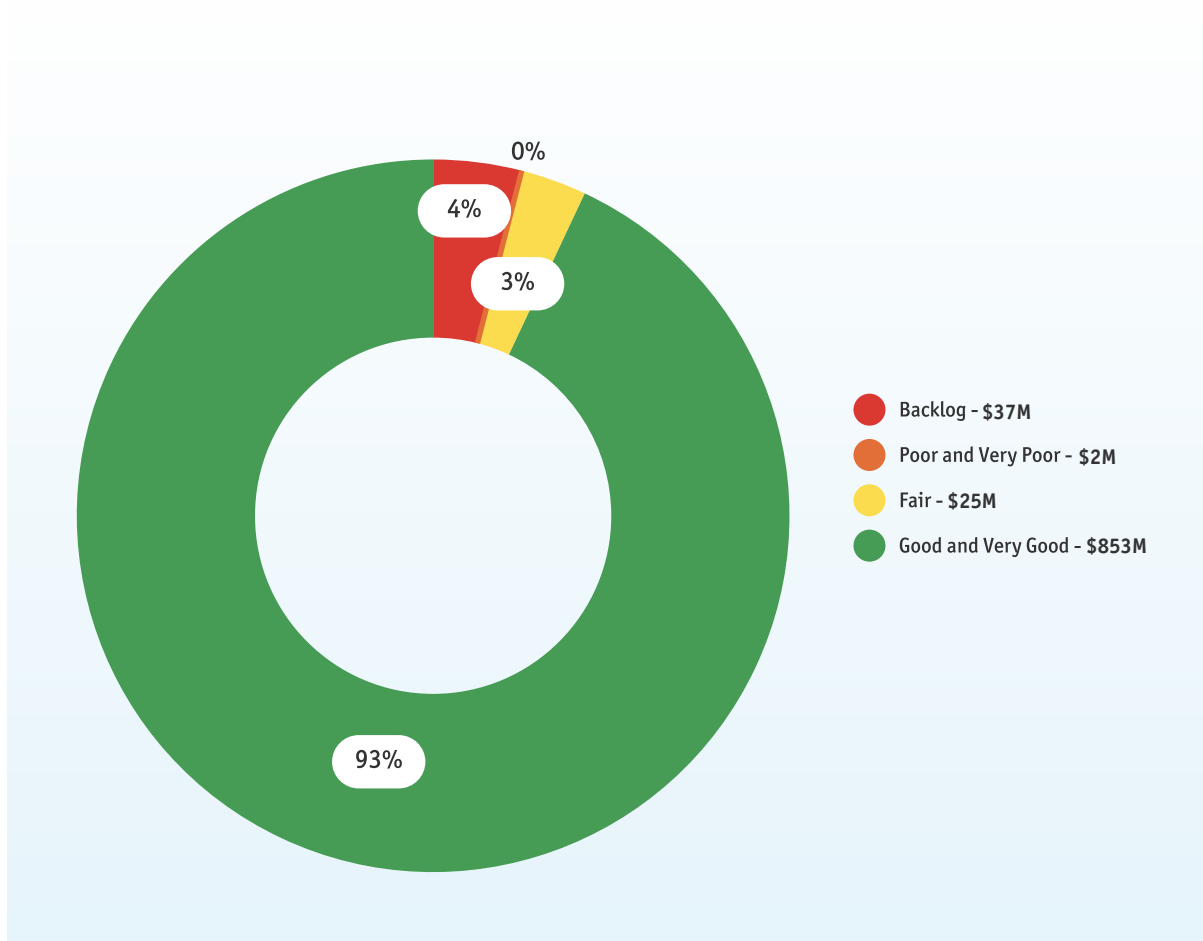
Drainage (Rainwater)

The City provides a drainage system that conveys rainwater to natural water bodies. The overall goals are to convey water away from roads, properties and buildings in a safe and sustainable way, while mitigating adverse impacts on natural watercourses, and contributing to the health of natural areas.

The City’s drainage system includes more than 450 kms of mains and culverts, ditches, catchbasins, and retention ponds.

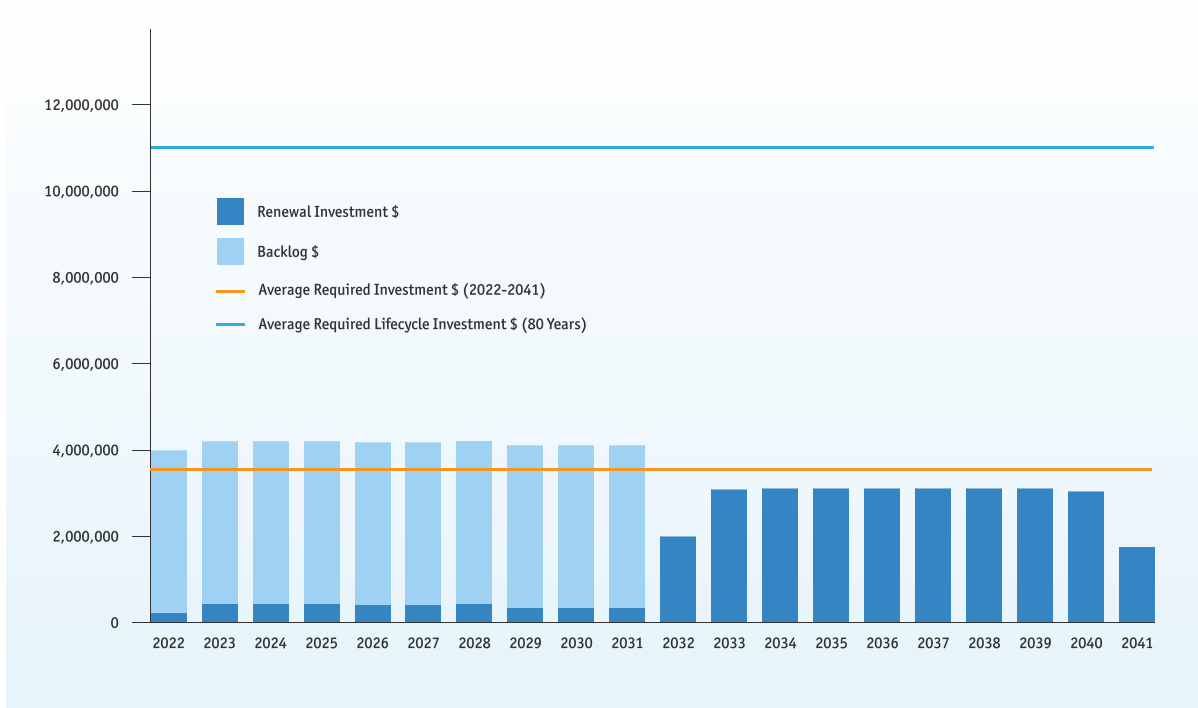
Detailed asset information for mains including location, material type, and in-service year are maintained in the City’s GIS system. Engineering drawings, often referred to as ‘as built’ drawings, are completed after construction of drainage mains and are the primary source of asset information.

Drainage Infrastructure Current Condition



Condition of current infrastructure only, does not include capacity.

Drainage Infrastructure 20 Year Asset Management Plan: Renewal



The graph is generated from the City’s asset renewal models based on 2021 costing. Projected investment will not be the same as the City’s approved Financial Plan, the department’s 10 Year Project Plan or the 20 Investment Plan due to project costing, project prioritization, resource and funding constraints.

Drainage Infrastructure Service Life and Current Age

Infrastructure Type	Expected Service Life – City	Current Age (yrs)*	Measurement
Drainage Mains – 473 kms	31-100 years depending on material	28.1	weighted average age (lm)

*Inventory age in 2021

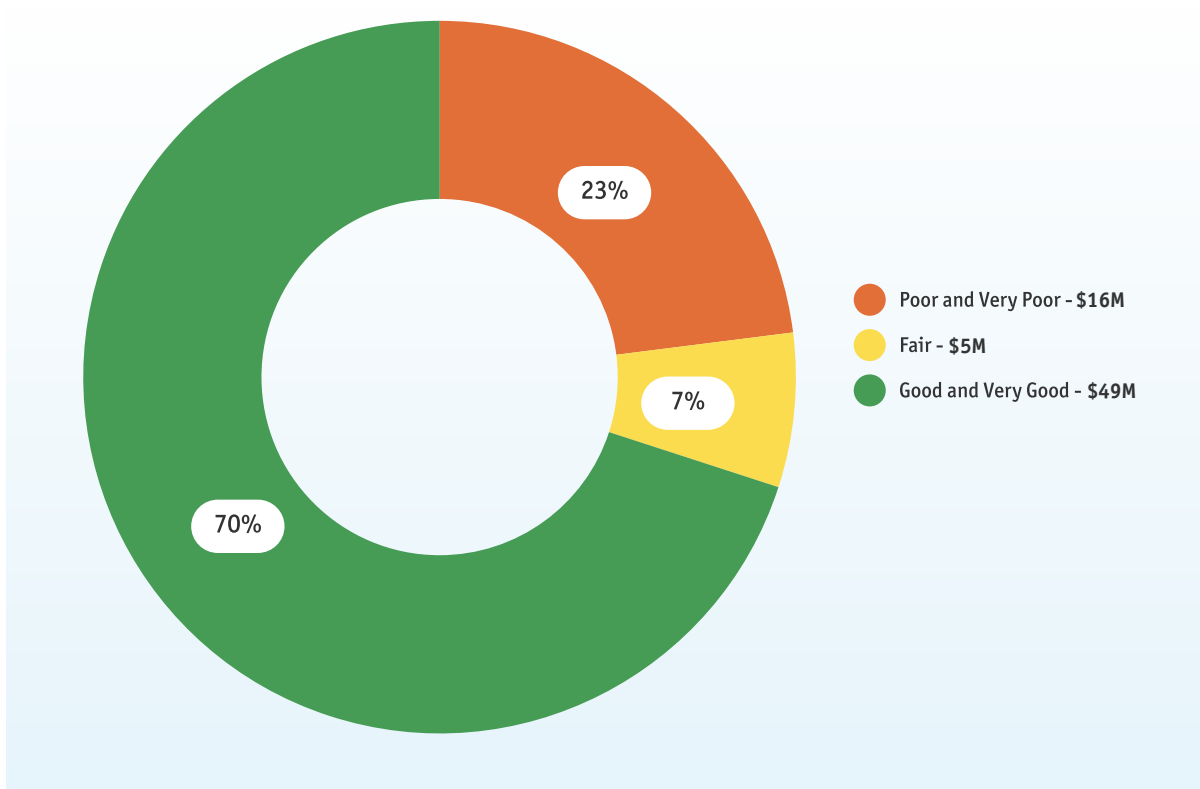
Parks Amenities

The City maintains, develops and conserves over 1,125 hectares of parkland and environmentally protected areas providing recreational opportunities for residents and visitors. The Stadium District, Beban Park and Bowen Park all provide a variety of park amenities to support active and healthy lifestyles.

Park amenities include 13 destination parks including Maffeo Sutton and Westwood Lake parks, neighbourhood parks, sports fields including three artificial turf fields, playgrounds, waterparks/spray parks, skateboard parks, over 150 km of multi-purpose trails, dog-off leash parks, bike parks, boat ramps, and six recreational dams.

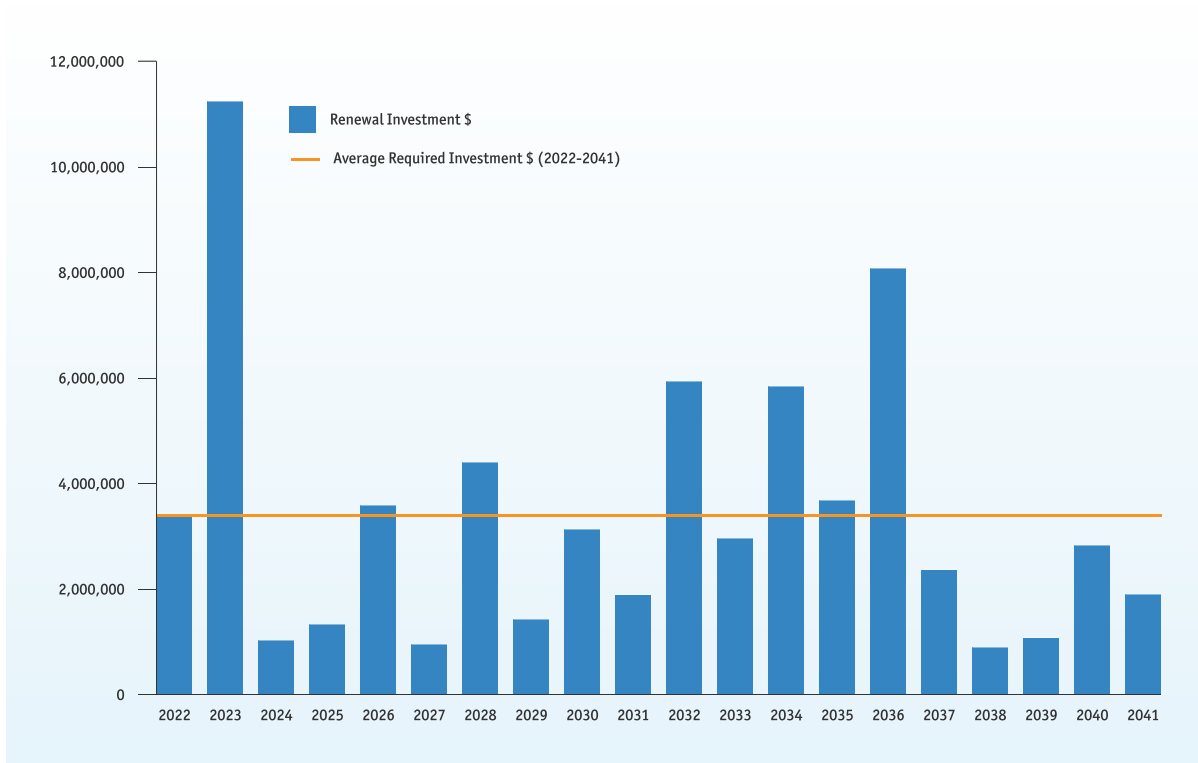
Detailed asset management plans are still under development for a number of park amenities however significant improvements to inventory and condition information has been made since the last update. For this update, detailed asset information for trails including location and material type has been entered and is being maintained in the City’s GIS system. With support from a grant from the UBCM Strategic Priorities Fund, detailed asset management plans including inventory and condition information of play equipment and safety surfacing have been developed for each playground. The City will continue to update/refine the asset management plans for other park amenities for subsequent updates.

Parks Amenities Infrastructure Current Condition



Condition of current infrastructure only, does not include capacity. Excludes \$20.8 million in trails as condition can vary significantly between different sections of the trail and \$2.8 million in other park amenities due to insufficient inventory information. Future updates will explore providing condition ratings by segment or an average rating to overall trail.

Parks Amenities Infrastructure 20 Year Asset Management Plan: Renewal



The graph is generated from the City’s asset renewal models based on 2021 costing. Projected investment will not be the same as the City’s approved Financial Plan, the department’s 10 Year Project Plan or the 20 Investment Plan due to project costing, project prioritization, resource and funding constraints. The long-term plan includes renewal of Louden Park at its current (2023) estimated construction budget.

Park Amenities Infrastructure Service Life

Infrastructure Type	Expected Service Life – City
Parks/Sports Fields/Playfields	6-65 years depending on amenity
Playgrounds	Varies by playground component
Trails	20-30 years depending on material
Recreational Dams	80 years

The park amenities inventory is still under development with in-service years and expected service life still to be determined for some assets. This area will continue to be updated and refined for the next update.

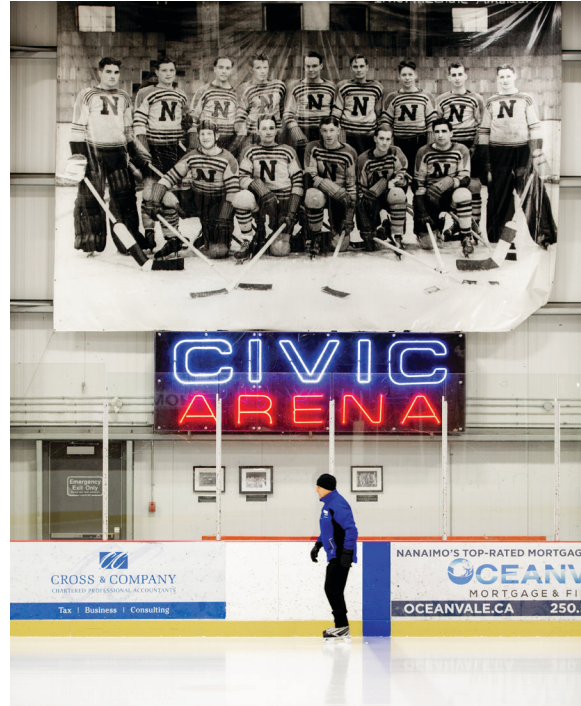
Facilities

The City currently has over 100 facilities located at over 60 sites providing almost 200,000 sq. metres of space to support the delivery of services.

Facilities include:

- Civic office buildings including City Hall and the Service and Resource Centre (SARC)
- Fire and police buildings
- Public works and parks operation yards
- Recreation facilities including aquatic, arena and community centres
- Cultural facilities including the Port Theatre
- Parkades
- Port of Nanaimo Centre (includes the Vancouver Island Conference Centre and Nanaimo Museum)

Asset management for buildings is complex, as they are made up of many components with different service lives, functions, and operating and maintenance requirements. The asset management plan assumes that all facilities will be maintained at current function and service levels; strategic divesting, consolidation or expansion has not been included. Significant improvements to inventory and condition information have been made since the last update was undertaken. With support from a grant from the UBCM Strategic Priorities Fund, detailed asset management plans for the next 30 years including inventory and condition information are in the final stages of development for all major facilities. Condition assessment programs continue to provide information on the functionality and replacement schedules for facilities and the City continues to explore opportunities to incorporate greening facilities into renewal projects. The valuation for facilities assumes rebuilding of the same size and amenities and was updated from insurance valuation, and cost consultant extrapolation. Recent construction costs suggest that the portfolio valuation is likely still lower than actual, given likely aesthetic and energy efficiency improvements implemented with projects. For subsequent updates the City will work to develop asset management plans for small facilities.



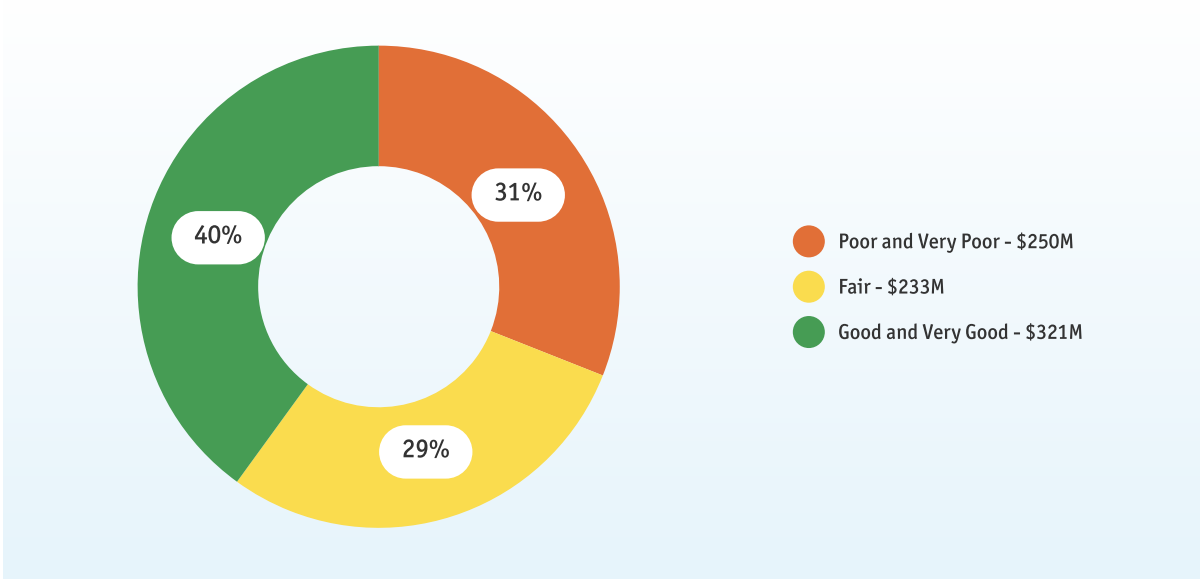
Facilities Infrastructure Current Condition

Condition of current infrastructure was based on the facility condition index score (FCI) for major facilities except for a few facilities where the FCI did not accurately reflect current condition. The FCI is the ratio of the projected cost for the next five years of renewals (including deferred renewals from past years) divided by the current cost of replacing the building.

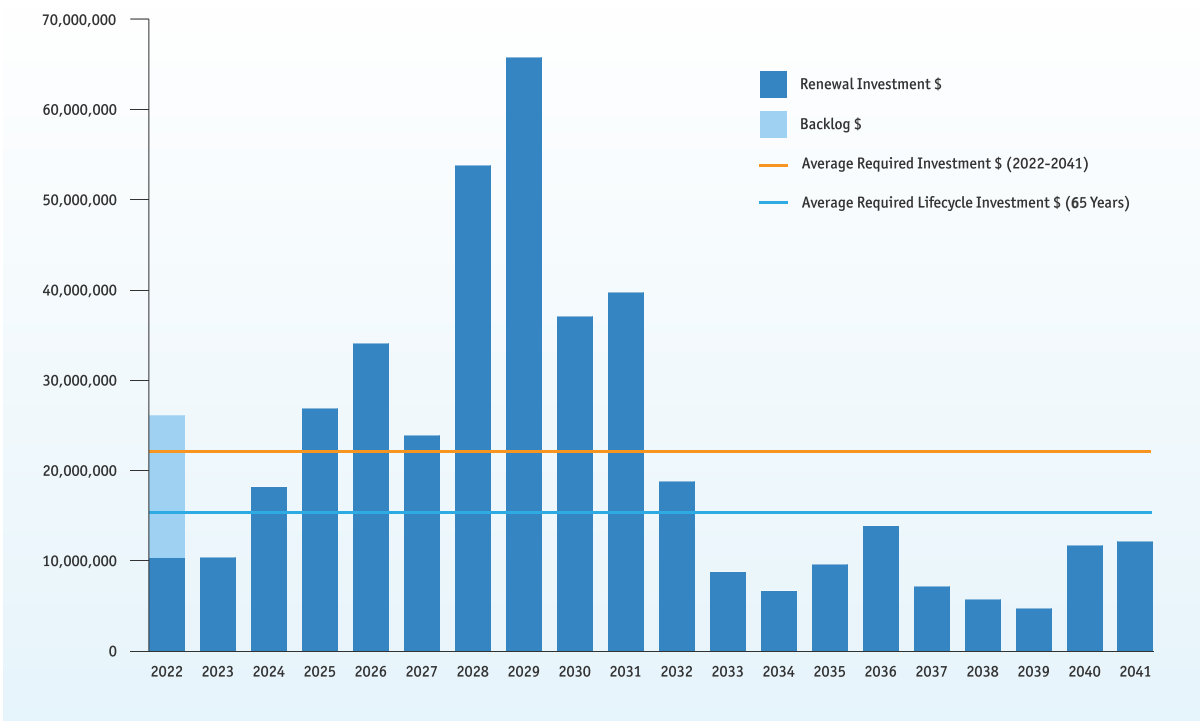
Facility Infrastructure Service Life and Current Age

The service life of non-historic facilities is estimated at 65 years. This is intended to be an average service life for facilities. Some facilities may last longer, others may be replaced sooner. Evolving needs and desires of the community and services can result in facility replacement earlier than the 65-year service life considered. 63 per cent of all buildings in our current inventory will reach their 65th year in-service by 2050.

Facilities Infrastructure Current Condition



Facilities Infrastructure 20 Year Asset Management Plan: Renewal



The graph is generated from the City’s asset renewal models based on 2021 costing. Projected investment will not be the same as the City’s approved Financial Plan, the department’s 10 Year Project Plan or the 20 Investment Plan due to project costing, project prioritization, resource and funding constraints. The long-term plan includes renewal of Public Works Yard (NOC project), and RCMP Detachment at their current (2023) estimated construction budgets.

Information Technology

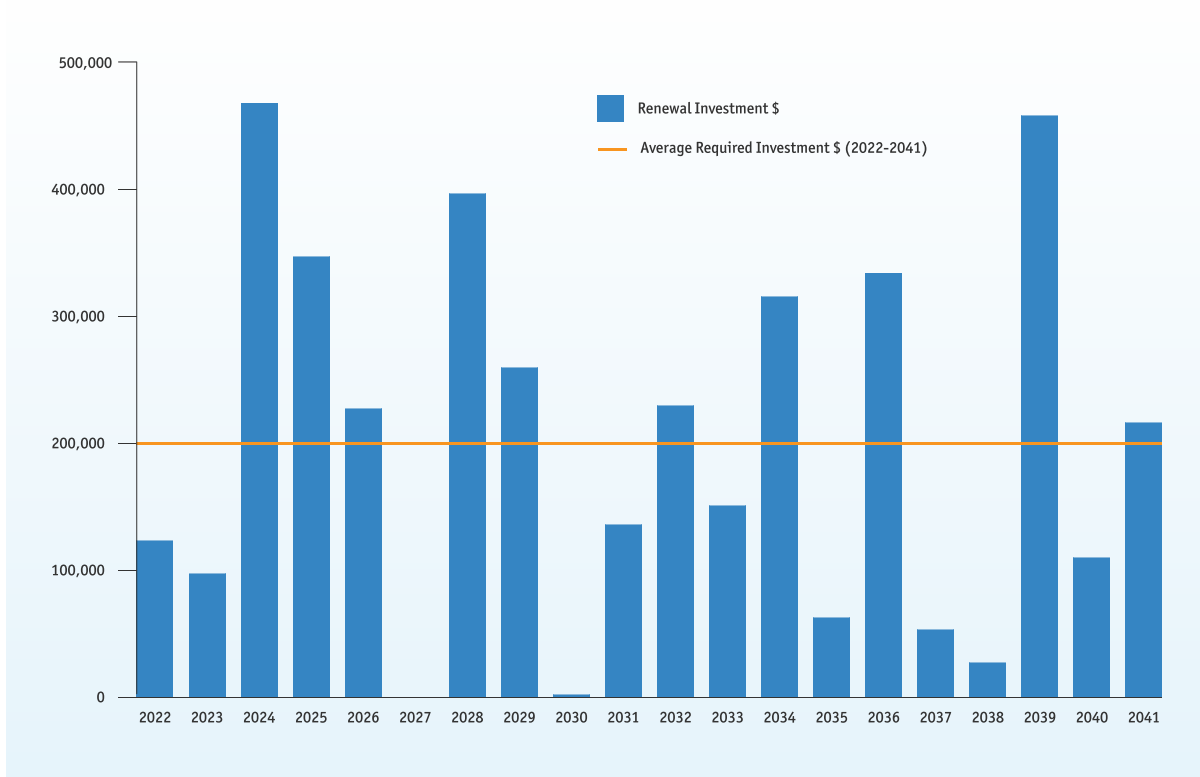
The City’s information technology includes computers, mobile devices, physical and virtual servers, printers, software, communication infrastructure, radio systems, fibre optic networks, and specialized equipment. These systems support over 120 business applications used by staff and the public and support the day-to-day delivery of City services.

Developing asset management plans for technology equipment is challenging as renewal can be required

due to changing technologies, end of maintenance and support services, as well as physical end of life. Replacement of assets may include different configurations and functionality as replacement with current functionality is no longer available. The plan excludes system replacements (i.e., Enterprise Resource Planning software) as it is anticipated the majority of the City’s future software costs will be operational as software-as-a-service cloud-based options become the preferred solution.

Information Technology 20 Year Asset Management Plan: Renewal

Includes only major IT hardware and fibre optic cable network.



The graph is generated from the City’s asset renewal models based on 2021 costing. Projected investment will not be the same as the City’s approved Financial Plan, the department’s 10 Year Project Plan or the 20 Investment Plan due to project costing, project prioritization, resource and funding constraints.

Fleet

The City’s fleet includes cars, trucks, heavy equipment, solid waste collection equipment, fire apparatus, and ice resurfacing equipment used by various departments to provide essential services to the community. These units are used by over 530 City employees.

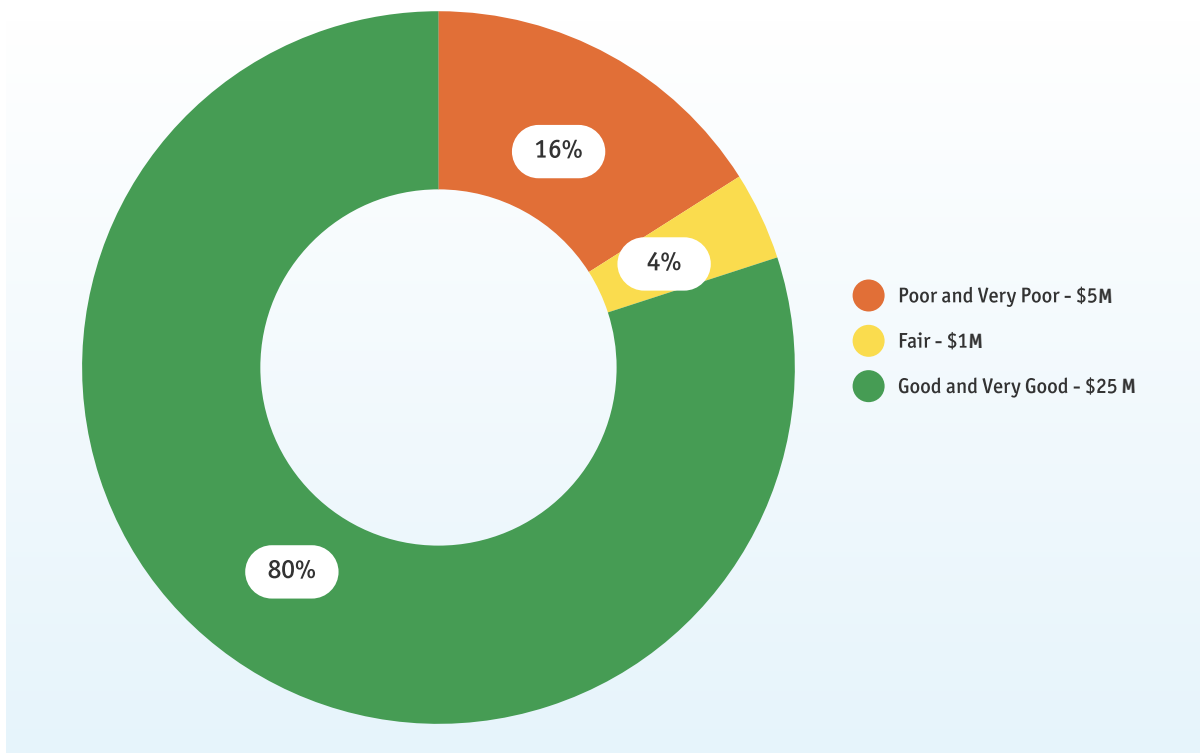
Detailed asset information for the fleet is maintained by departments and planned replacement dates are reviewed and updated annually based on condition information. The fleet lifecycle is relatively short lived compared to other City assets. Replacement plans incorporate the City’s Green Fleet Strategy, as appropriate, in order to reduce green house gas emissions and fuel consumption.



Fleet Current Condition

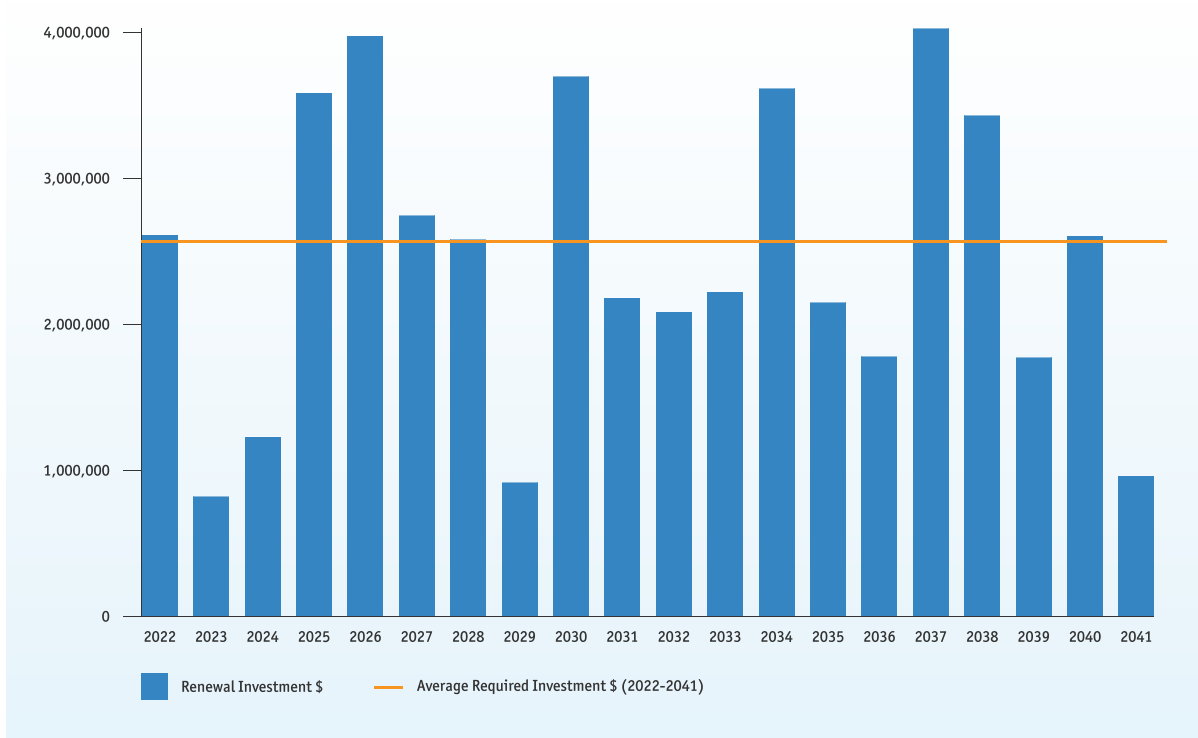
Due to the COVID-19 Pandemic and supply chain issues, vehicle purchases and the arrival of new units has been delayed. Units are ordered as they reach end of life however delivery times are significantly longer than the City has previously experienced, in some cases extending to years.

Fleet Infrastructure Current Condition



Condition of current infrastructure only, does not include capacity.

Fleet 20 Year Asset Management Plan: Renewal



The graph is generated from the City’s asset renewal models based on 2021 costing. Projected investment will not be the same as the City’s approved Financial Plan, the department’s 10 Year Project Plan or the 20 Investment Plan due to project costing, project prioritization, resource and funding constraints.

Fleet Service Life and Current Age

Infrastructure Type	Expected Service Life – City	Current Age (yrs) *	Measurement
City Fleet: Light & Medium Duty - 89 units	10 years, adjusted based on usage	6.1	average age
City Fleet: Heavy Duty - 62 units	8-30 years depending on unit	6.3	average age
Fire Fleet: Boats/Fire Pumps/Trailers - 9 units	15-20 years	8.8	average age
Fire Fleet: Fire Apparatus - 11 units	25 years	8.9	average age
Fire Fleet: Vehicles - 9 units	10-20 years, adjusted based on usage	9.0	average age
Ice Resurfacers - 4 units	15-20 years	11.3	average age

*Inventory age in 2021, only units City intends to replace.

Continuous Improvement: The City's Asset Management System

The City's Asset Management Steering Committee is currently leading and coordinating the following AM improvement initiatives.

Corporate Asset Management Software (CAMS)

AM is data intensive, and the City currently uses the GIS system and other systems and tools to maintain inventory and condition information on its assets. In 2021, the City began a multi year CAMS project. Cartegraph, a software application, was selected which will map, track and manage the City's assets, and aid future decision making. Once fully implemented the software will integrate operating activities with asset investment planning.

Level of Service

The City is currently undertaking a Level of Service (LOS) Study: Asphalt funded in part by a grant from the Federation of Canadian Municipalities. LOS helps to determine the service levels that meet residents and business expectations at an affordable, sustainable cost within an appropriate risk tolerance.

Facility Asset Management Strategy

The City has a grant from the Province of BC to assist with a Facility Asset Management Strategy (formerly Facility Master Plan) in 2023. The Facility Asset Management Strategy will provide a framework for facility-focused asset management and renewals. Having the appropriate plan in place will allow more comprehensive renewal planning and with a more integrated outlook for future timeframe.

Staff Training

The City continues to promote and support AM training and learning opportunities for staff.



Definitions

Asset: A useful or valuable resource with the intended purpose of providing a benefit or service or fulfilling a need.

Asset Management: An integrated approach involving planning, engineering and finance to effectively manage existing and new municipal infrastructure to maximize benefits, reduce risk and provide satisfactory levels of service to the community.

Asset Management Plan: A plan developed for the management of infrastructure assets that combines multi-disciplinary management strategies (including technical and financial) over the lifecycle of the asset type in the most cost-effective manner to deliver a specified level of service.

Asset Management Policy: Endorsed by senior management to establish responsible governance for the practice of asset management. The policy includes guiding principles in applying asset management to achieve the organization's objectives.

Asset Management Strategy: Focuses on specific actions to be undertaken in the organization to improve/enhance its AM capabilities and competencies and to develop a structured set of actions aimed at enabling good, or where proven cost-effective, best practices.

Asset Management System: A structured approach for the development, coordination and control of activities for managing assets that align organizational activities to deliver services and meet organizational objectives.

Asset Type: Group of assets that have similar characteristics and/or functionality.

Current Condition Graphs: Where condition information is not available condition is determined based on remaining estimated service life based on City experience and/or industry standards based on material type and in-service date. For the majority of assets condition is graded using a six-point system –



backlog, very poor, poor, fair, good, and very good. For the purposes of the condition graphs, categories have been combined into:

Backlog: Asset is beyond its anticipated service life.

Very Poor/Poor: Asset is physically deteriorated. Performance does not meet many of the user's key needs. Replacement components may be available but usually with a lengthy lead time. Compatibility with interacting systems is likely an issue. Unplanned service interruption is possible with significant duration or impact. Upkeep maintenance costs and frequency exceed acceptable standards. Asset is within the last third of its expected service life.

Fair: Asset is showing signs of physical deterioration. Performance meets many of the user's key needs. Replacement components are available but with increasing difficulty. Compatibility with interacting systems is unlikely an issue. Unplanned service interruption is possible, but likely minimal in duration or impact. Upkeep maintenance costs and frequency are

increasing. Asset is within the second third of its expected service life.

Good/Very Good: Asset is physically sound. Performance meets all the user's key needs. Replacement components are readily accessible. Compatibility with interacting systems is not an issue. Unplanned service interruption is unlikely. Upkeep maintenance costs and frequency are within acceptable standards. Asset is within the first third of its expected service life.

Development Cost Charges (DCC): The Local Government Act allows the City to collect monies from developers to offset new/upgraded infrastructure investment needed for growth. The City has been collecting DCCs since 2001. Periodic review of the expected investment in infrastructure and charges support Council's decision regarding rates. A DCC review is currently underway.

Geographic Information System (GIS): A system that creates, manages, analyses and maps all types of data. GIS connects data to a map, integrating location data (where things are) with all types of descriptive information (what things are like there).

Level of Service: A composite indicator that reflects the social, environmental and economic goals of the community and may include any of the following parameters: safety, customer satisfaction, quality, quantity, capacity, reliability, responsiveness, environmental acceptability, cost, and availability.

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

Stakeholders: Internal and external people and organizations that can affect or be affected by the organization's actions. Examples include members of the community including businesses, Council, employees, unions, suppliers, and other governments.

Sustainability: The pillars of sustainability include ensuring that the current social, economic and environmental commitments are considered in investment decisions and that those decisions will not compromise the ability of future generations to meet their own needs.

Upgrade: Investment in added or enhanced components to existing infrastructure assets designed to increase service capacity required for growth. Upgrading may also be required to meet building code changes, new regulations, adjusted service levels, or technology improvements.



Appendix A: Asset Management Reserve Funds

In 2013, Council approved the creation of three asset management reserve funds. Approved annual increases to the reserves are as follows:

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
General AM Reserve Fund ¹	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Sewer AM Reserve Fund	5.0%	5.0%	5.0%	5.0%	5.0%	4.0%	4.0%	4.0%	4.0%	4.0%	2.0%
Water AM Reserve Fund	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	0.0%	2.0%

¹Continuation of 1% increase approved in 2020 up to and including 2027 or next Asset Management Plan Update and recommendations. Recommendations from this update will be incorporated into 2024 - 2028 Financial Plan.

Appendix A: Asset Management Reserve Funds

Below is a summary of contributions and withdrawals to the City's asset management reserve funds.

	Actuals										Budget
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
General Asset Management Reserve Fund¹											
Opening Balance		837,682	2,524,998	4,863,087	7,551,310	10,148,381	11,258,946	9,172,413	11,464,273	13,725,329	17,041,028
Additions ²	897,309	1,822,389	4,394,824	3,777,926	4,806,072	5,880,201	6,846,822	7,799,493	8,937,772	10,398,345	11,560,904
Withdrawals	59,627	135,073	2,056,735	1,089,703	2,209,001	4,769,636	8,933,355	5,507,633	6,676,716	7,082,646	19,712,790
Balance at December 31	837,682	2,524,998	4,863,087	7,551,310	10,148,381	11,258,946	9,172,413	11,464,273	13,725,329	17,041,028	8,889,142
Sewer Asset Management Reserve Fund											
Opening Balance		238,155	746,650	512,605	834,516	1,146,300	2,833,790	2,227,853	3,441,257	4,099,117	5,618,996
Additions ²	238,155	508,495	793,114	1,093,156	1,419,409	1,708,386	2,013,279	2,300,863	2,616,838	3,026,302	3,225,598
Withdrawals			1,027,159	771,245	1,107,625	20,986	2,619,216	1,087,459	1,958,978	1,506,423	2,322,826
Balance at December 31	238,155	746,650	512,605	834,516	1,146,300	2,833,790	2,227,853	3,441,257	4,099,117	5,618,996	6,521,768
Water Asset Management Reserve Fund											
Opening Balance		308,840	943,649	1,225,984	1,135,280	2,664,841	4,646,913	6,919,104	7,604,781	10,636,465	10,309,745
Additions ²	308,840	634,809	987,345	1,361,522	1,768,272	2,242,216	2,754,715	3,253,373	3,777,565	3,921,174	4,288,571
Withdrawals			705,010	1,452,226	238,711	260,144	482,524	2,567,696	745,881	4,247,894	10,159,974
Balance at December 31	308,840	943,649	1,225,984	1,135,280	2,664,841	4,646,913	6,919,104	7,604,781	10,636,465	10,309,745	4,438,342

¹Continuation of 1% increase approved in 2020 up to and including 2027 or next Asset Management Plan Update and recommendations. Recommendations from this update will be incorporated into 2024 - 2028 Financial Plan.

²Includes interest earned on balance.

In 2015, \$1.6M transferred from Local Improvement Reserve to General Asset Management Reserve Fund.

Appendix B: Impacts of Climate Change on Local Government Infrastructure

The listing of potential impacts below is adapted from Asset Management BC's Sustainable Service Delivery Primer on Climate Change.

The City considers climate change impacts when designing new and replacement infrastructure, considering where to prioritize improvements and in emergency planning.

Drinking Water

- Drought leading to loss of reliable water sources.
- Reduced source water quality and reduction of potable water availability.
- Increased water demands leading to system capacity issues and stress on water sources.
- Infrastructure damage from fires and flooding
- Water-borne health effects from increased flooding
- Summer taste/odour problems in potable water supply
- Reservoir dam failures

Facilities - Buildings

- Damage due to forest fires
- Damaged or flooded structures
- Increased indoor air temperature and reliance on cooling systems, increased energy use.
- Reduced service life and functionality of components and systems.

Transportation

- Soil instability, ground movement, and slope instability, leading to road damage from erosion, landslides, and embankment failure.
- Increased frequency/severity of thermal cracking, rutting, frost heave, and thaw weakening.

- Bridges, and low-lying roads have a high risk of being inundated or damaged from high streamflow or sea level rise.

Wastewater

- Increased inflow and infiltration leading to system capacity more frequently exceeded (leading to surface surcharging and basement flooding).
- Changes to wastewater effluent characteristics.
- Buildings, buried piping, housed process equipment affected by flooding.

Drainage and Flood Protection

- System capacity more frequently exceeded.
- Capacity of culverts and storm sewer systems more frequently exceeded, leading to road washout.
- System failure causing damage to property and other infrastructure systems.

Parks

- Drought leading to increased stress on vegetation and potential water restrictions for built water features.
- Loss of trees due to drought and windstorms.
- Increased temperatures leading to increased demand on parks with water features (natural or constructed).
- Changes to water quality of adjacent lakes or rivers impacting recreational use.
- Increased erosion and decreased slope stability.

Solid Waste Management

- Increased odour and pests during warmer summers and winters.

Source: <https://www.assetmanagementbc.ca/wp-content/uploads/Climate-Change-and-Asset-Management.pdf>

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