CITY OF DUNCAN

LONG TERM FINANCIAL PLAN FOR ASSET MANAGEMENT

OCTOBER 2024

FIT CONSULTING

ACKNOWLEDGMENTS

The Sustainable Infrastructure Replacement Plan (the Plan) was prepared by Christopher Paine, CPA, CGA, FIT Local Government Consulting. This project has significant input from the City of Duncan Departments and consultants, specifically:

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EXECUTIVE SUMMARY

Introduction

The City of Duncan is a small town with a vibrant character located in the heart of the Cowichan Valley, on the ancestral and unceded territory of the Quw'utsun Mustimuhw (People) of Cowichan Tribes. The City covers a relatively small geographical area of 2 km2 but operates an infrastructure with a value exceeding half a billion dollars. The City provides services to many jurisdictions outside its borders including the City of North Cowichan, the Cowichan Valley Regional District, and the Cowichan Tribes.

Purpose of this Plan

This Plan was primarily developed to support sustainable service delivery of the City's capital services. In order for the City's capital services to remain sustainable, appropriate funding must be dedicated for infrastructure replacement. This Plan estimates sustainable funding levels by modelling estimated replacement costs over a 100-year timeframe.

Key Findings

This Plan has the following key findings:

- **Inventory Valuation**: The replacement costs of the City's depreciable assets are estimated to be approximately $524.5M
- **Infrastructure Condition:** Overall, the Local Government's assets are in fair-good condition.
- **Infrastructure Consumption:** The City's assets are estimated to be 65% through their useful life on average. The value of this consumption is estimated to be $367.2M. In comparison, the City has 12.4M in accumulated infrastructure renewal reserves.
- **Annual funding levels**: Annual funding levels are currently not sustainable. Annual funding is estimated to be between 45 and 49% sustainable. Modelling indicates that current funding levels could result in a $490M 100-year funding gap.

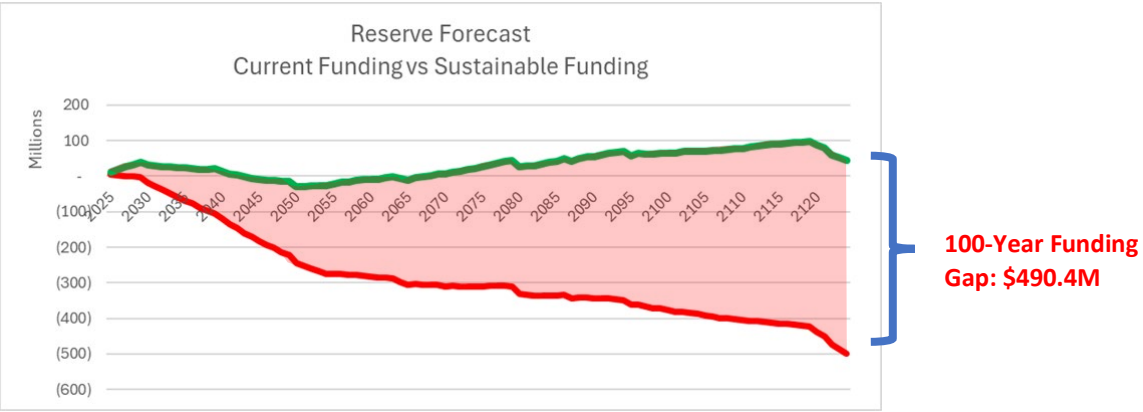


Figure 1: 100 Year Funding Gap Forecast

- **Sensitivity Analysis**: A sensitivity analysis was conducted to help authenticate the broad findings of this review. To achieve this, useful lives for sanitary sewer, drainage, and road assets were modelled +/-25% from the base scenario. Sensitivity analysis findings support the finding that current funding levels are not sustainable and an annual funding gap for infrastructure replacement exists.

Key Recommendations

The Plan contains the following key recommendations:

1. Increase funding to sustainable levels:
    a. Implement 15-years of 1.75% Water User Fee increases.
    b. Implement 10-years of 1% Sewer User Fee increases for existing infrastructure.
    c. Continue to increase Sewer User Fees by at least 3% annually in anticipation of the JUB Outfall project cost.
    d. Implement 15-years of 1.75% tax increases for general infrastructure replacement.
2. Establish Infrastructure Renewal Only Reserves
3. Establish a policy that dedicates Canada Community Building Fund proceeds to infrastructure renewal
4. Establish a policy that transfers unspent Utility Capital Budget surpluses to utility infrastructure reserves
5. Increase annual infrastructure replacement funding by a factor equal to annual Capital Cost Index increases
6. Integrate Lifecycle costing in City's decision making in the following ways:
    a. Amend the Local City's Purchasing Policy to consider lifecycle costing when evaluating procurement decisions.
    b. Amend the City's Financial Plan Policy, found within the Financial Plan Bylaw, to require a lifecycle costing analysis to be conducted when new capital expenditures are considered.
7. Align long term cash flows with investment portfolio/horizon

SCOPE OF WORK AND LIMITATIONS

Scope of Work

FIT Local Government Consulting was engaged to provide the following services:

1. Prepare a professional report that details:
   - Estimated replacement costs by asset class,
   - Forecasted infrastructure replacement costs over selected time horizon,
   - Analysis of current funding vs. sustainable funding,
   - Quantification of annual funding gap or surplus,
   - Sensitivity analysis that models changing of key forecasting variables,
   - Forecasted reserve balances,
   - Executive summary outlining key findings and key recommendations,
   - Policy recommendations,
2. Provide a financial modelling database.
3. Prepare a PowerPoint presentation.
4. Attendance at a Council meeting to present findings.

Key Assumptions

Capital grants: Forecasts do not include any potential conditional grants awarded by senior levels of government. However, forecasts do include ongoing Canada Community Building Fund payments.

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

Culvert Data: No culvert data was provided during the engagements. As such forecasts and inventory quantification excludes culverts.

Climate change: The Plan did not examine the risk or impact of climate change to the City's infrastructure or private property. Further review, funding, and staff capacity would be required should Council wish to understand the broader implications of climate change risk to the community.

Existing Capital Only: The Plan does not model anticipated growth in infrastructure requirements. Forecasts are based on the replacement of existing municipal infrastructure only. For instance, these forecasts have not contemplated the increased capacity required to support future densification or development. The Plan has not anticipated potential future decisions to increase capital service levels. Adoption of the sustainable asset management recommendations in the Plan, will support the sustainable funding of future growth.

Inflation: Modelling has been prepared using 2024 values. No inflationary factor has been applied to forecasted replacement costs. As unit costs are likely to escalate, the City should consider applying an appropriate annual construction cost index increase to recommended investment levels.

Infrastructure Replacement Standards: Forecasts are prepared with the assumption that infrastructure will be replaced at the same standard that currently exists. However, some of the City's infrastructure does not meet existing standards, for example, some of the City's sidewalks are 1.5m in width and would need to be widened to 2.0m to meet improved standards.

Investment Revenue: Modelling has integrated a 3.0% investment return rate. This assumption may be conservative in the long run. Since its inception, the Municipal Finance Authority Money (MFA) Market Fund has had a historical return of 3.59%. However, the return has been 1.05% for the past 5 years. Yields have recently swung from a historically low yield of less than 0.25% to a current yield of above 3.00% and may continue to rise. Additionally, the City can choose to diversify its long-term cash flows in high-yielding funds such as the MFA's bond fund. This fund has returned over 5% on average since inception, with a 1.43% 5-year average. The MFA has recently introduced a new Diversified Multi-Asset Class Fund, which is exposed to market equities and is expected to produce high yields over the long term. Doubling forecasted investment returns from 1.50% to 3.00% could increase modelled investment returns significantly over the next 100 years.

Joint Utilities Board (JUB) Assets: The consultant utilized a $5M replacement cost multiplied by the City's ownership share of 31% in forecasts and modelling.

Joint Utilities Board Outfall Relocation Project: Forecasted costs related to Outfall Relocation project have not been integrated into spending forecasts nor contemplated in recommended funding levels.

Park Improvements: Park and Land improvements have not been included in the scope of this project. Replacement costs of park and land improvements are expected to be a small proportion of the City's asset inventory and relatively immaterial to findings.

Replacement Cost Accuracy: Unit rates were developed to estimate overall replacement costs and to develop a long-term sustainable funding model. No Class-D or above construction estimates have been prepared. Therefore, none of the spending forecasts should be utilized to prepare a capital plan. Spending forecasts demonstrate an overall funding level likely needed to support the ongoing replacement of existing infrastructure. Replacement cost accuracy will differ between asset class and subclass:

- **Roads, storm sewer, sanitary sewer, and water infrastructure:** assumed zero bedrock removal, depth of mains 1 to 2.5 meters, nothing deep, no bypass pumping, or removal of existing mains is assumed.

- **Buildings:** based on most recent replacement cost appraisals available. Capital maintenance of subcomponent was estimated using industry accepted best practice of percentage of replacement cost componentization.
- **Vehicles and Equipment:** based on most recent vehicle equipment plans prepared by City.

Works of Art: The City manages and controls various works of art and non-operational historical, and cultural assets, including buildings, artifacts, paintings, totems and sculptures located at City sites and public display areas. These various works of art have not been considered in the Plan's modelling.

Unit Pricing Inclusion: Unit prices were current as of April 2024. All unit costs used to derive replacement costs include 15% Engineering and Construction Administration plus a 40% contingency.

Useful lives: The Plan utilizes a modified National Asset Management Standards (NAMS) approach to useful lives. Useful lives were generally estimated to be near the midway point of the NAMS recommended useful life range, with some exceptions based on recent condition assessments. See Appendix D for full useful life estimates.

Sources of Information

The Plan was prepared using the following sources of information:

- 2024-2028 Financial Plan
- Annual Report – Year Ended December 31, 2023, City of Duncan
- Financial Statements – Year Ended December 31, 2023, Joint Utilities Board
- Appraisal Report of Specified Property, Suncorp Valuations, October 4, 2022
- Tangible Capital Asset subledger export, December 2024
- Graphical Interface Layers for Parks, Sanitary Sewer, Storm Drain, Roads, Water,
- Official Community Plan Bylaw No. , 2030, 2007
- Pavement Budgeting Model
- City of Duncan Purchasing Policy
- Asset Management Policy, City of Duncan
- Aquatic Centre Contribution Agreement, 2010
- City of Duncan Strategic Plan 2019-2022
- City of Duncan Strategic Plan 2023-2026

SECTION A: ASSET MANAGEMENT IN DUNCAN

Purpose of the Plan – Alignment of Long-Term Funding

The Plan was primarily developed to support sustainable service delivery of the City of Duncan's capital services. For Duncan's capital services to remain sustainable, appropriate funding must be dedicated to infrastructure replacement. The Plan estimates sustainable funding levels by modelling estimated replacement costs over a 100-year timeframe.

Introduction to Asset Management

Legislative Prerogative

A municipality's asset management responsibilities are firmly imbedded in the Community Charter:

> ***"The purposes of a municipality include…. (c) providing for stewardship of the public assets of its community"***

This responsibility was found in the Municipal Act, which preceded the Community Charter and is found in sister legislation, the Local Government Act. Providing for the stewardship of public assets includes planning for and funding the maintenance, repair, and eventual replacement of such assets.

Asset Management BC Framework

In 2019, Asset Management BC developed a BC Framework for a municipal approach to Asset Management. This Framework recommends three-part and cyclical approach to asset management for BC municipalities:

1. **Assess** asset management practices and the state of assets,
2. **Plan** what needs to be done to improve asset management, and
3. **Implement** the plans.

Figure 2: Asset Management BC Framework

The City of Duncan has made considerable progress in its Asset Management journey, and the Plan represents a significant step forward in progress. Other progress includes the following:

- ✓ Condition assessments conducted on linear assets
- ✓ Asset Management software implementation
- ✓ Adoption of an asset management policy

Council Direction – Asset Management

The City has made significant progress in asset management planning and has provided clear and consistent direction over successive Council terms:

- **2016:** Council adopts the City's Asset Management Policy
- **2019-2022 Strategic Plan:** Council directed staff to create a draft asset management and develop a long term financial plan.
- **2023-2026 Strategic Plan:** Council directed staff to continue asset management planning including the creation of an asset management plan.

SECTION B: OVERVIEW OF ASSET INVENTORY

Inventory Valuation

The estimated replacement costs of the City of Duncan's depreciable assets are approximately $524.5. The value of Duncan's Asset Inventory demonstrates the significant service-providing value they have to the Community.

Table 1: Asset Inventory Valuation

Asset	Quantity	Replacement Value	Useful Life
Vehicles	≈ 73 units	$12.7M	13-17 years
Buildings[1]	5,470 m^2	16.3M	50-80 years
Road Infrastructure	275,100 m^2	115.4M	25-100 years
Drainage	27.9 km	76.9M	50-100years
Sanitary Sewer[2]	29.1 km	82.4M	50-100years
Water Infrastructure	82.8M	220.8M	50-100years
Total Depreciable Assets		$524.5M	

1: See Buildings section in Section F for important assumptions and limitations
2: See Sanitary Sewer section in Section F for important assumptions and limitations

Inventory Consumption

Overall, the City is estimated to be 65% ($367.2M) through the useful life of its depreciable assets.

Table 2: Asset Inventory Consumption

Asset	% Consumed	$ Consumed	% Overdue	$ Value Overdue
Vehicles & Equipment	56.3 %	$ 7.2M	21.8 %	$2.8M
Buildings	54.2 %	7.6M	0.0%[1]	0.0M
Road Infrastructure	55.9 %	78.5M	16.4%	25.5M
Drainage	77.8 %	59.8M	4.6%	3.5M
Sanitary Sewer	71.2 %	58.7M	2.3%	1.9M
Water Infrastructure	70.4 %	155.4M	40.2%	88.8M
Total	65.0 %	$367.2M	23.3%	122.5M

1: Note this represents buildings that are overdue for replacement but does not include potential facility capital maintenance that is overdue.

Summary of Asset Condition Assessments

Overall, condition assessments indicate that the City assets are servicing the purpose for which they were constructed. The lagging indicator is funding which is currently inadequate in all categories except Vehicles and Equipment. The City's infrastructure appears to be meeting the capacity needs of residents, and condition of the infrastructure is good in most categories.

Table 3: Summary of Condition Assessments

Asset	Overall	Condition and Performance	Capacity Vs. Need	Funding Vs. Need
Vehicles	B+	B	B+	A
Buildings	B	B+	B+	D
Road Infrastructure	B+	A	A	D
Drainage	B-	B+	A-	D
Sanitary Sewer	B	B-	A-	A[1]
Water Infrastructure	C+	C	A-	D

1: Funding rating is based on existing sewer infrastructure and does not include contemplation of the potential Joint Utilities Board Outfall Relocation Project costs. Including these costs would reduce the rating to an F-D range.

SECTION C: INFRASTRUCTURE FUNDING

Annual Funding Levels

Current annual funding levels are estimated to be $4.1M This assumes that the City will use 100% Canada Community Building Fund proceeds for infrastructure replacement.

Table 4: Current Infrastructure Funding

Funding Source	$ Value
Annual Transfers to Reserves: Machinery and Equipment Reserve	$300,000
Annual Transfers to Reserves: Fire Dept Equipment Reserve	327,900
Annual direct property tax funding for capital budget	706,500
Annual Canada Community Building Fund grant revenues	287,800
Total General & Property tax funding	1,622,200
Annual Transfers to Reserves for water capital budget	1,640,300
Annual Transfers to Reserves for sewer capital budget	844,100
Total annual funding sources for capital maintenance and replacement	4,106,600

Summary of Reserves (Accumulated Funding)

Table 5: Current Reserve Balances

Reserve	$ 2023 Ending
Machinery and Equipment	$2.8M
Capital works and other miscellaneous	1.0M
Police bridging capital	2.6M
Works and Services	0.1M
Firetruck borrowing	-1.7M
Total General Reserves	$4.8M
Total Sewer Reserves (Unappropriated)	$3.1M
Total Water Reserves (Unappropriated)	$4.4M
Total Infrastructure Replacement Reserves	$12.3M

Sustainable Annual Funding vs Actual

Annual sustainable funding is estimated to be $8.3M as outlined below. Annual sustainable funding is equal to the replacement cost of assets divided by its useful life.

Table 6: Annual Funding Gap: Lifecycle cost method

	Annual Sustainable Funding
Vehicles & Equipment	750,600
Buildings	545,100
Road Infrastructure	2,106,200
Drainage	982,000
Sanitary Sewer	1,023,300
Water Infrastructure	2,904,600
Total Annual Sustainable Funding	$8,311,800

Annual sustainable funding	$8.3M
Current annual funding	$4.1M
Annual Funding Gap	**$4.2M**

Annual sustainable funding is the average annual cost to replace assets over their lifecycle. Therefore, the City, on average, will have to invest an estimated $8.3M annually. However, current funding is approximately $4.1M. Therefore, the annual sustainable funding gap is estimated to be $4.2M ($8.3M – $4.2M).

Another methodology to determine the annual funding gap is to simply compare average annual spending to average annual funding over a 100-year timeframe.

Table 7: Annual Funding Gap: 100-Year forecast method

Asset	100-Year Forecasted Spending	Forecasted Spending Annualized
Vehicles & Equipment	$ 77.8M	$0.8M
Buildings	48.7M	0.5M
Road Infrastructure	246.5	2.5M
Drainage	106.5	1.1M
Total General Fund	$479.5M	$4.9M
Sanitary Sewer	$103.1M	$1.0M
Water Infrastructure	$330.8M	$3.1M
Total	$913.4M	$9.0M

This methodology yields a similar result: annual funding gap = 9.0M – 4.1M = 4.9M.

Capital maintenance and infrastructure replacement is funded from three broad sources:

1. General (property tax, and infrastructure grants),
2. Sewer utility user fees, and
3. Water utility user fees.

Accordingly, it is important to analyze funding gaps in these three broad categories. Solving the funding gap will require property tax increases and utility user fee increases.

Table 8: Annual Funding Gap by Fund

Asset	Forecasted Spending Annualized	Current Funding	Annual Funding Gap
Total General Fund	$4.9M	$1.6M	$3.3M
Sanitary Sewer	1.0M	0.8M	0.2M
Water Infrastructure	3.1M	1.7M	1.4M
Total	$9.0M	$4.1M	$4.9M

SECTION D: MODELLING

Infrastructure Replacement Forecast 2025-2124

The City is forecasted to spend approximately $913.5M (2024 dollars) over the next 100-years (2025-2124) on infrastructure replacement. This figure does not include new infrastructure acquired through that period. The City will need to prepare for this coming financial burden. It is estimated that $122.5M (23.3%) of the City's depreciable assets are overdue for replacement, highlighted in red below.

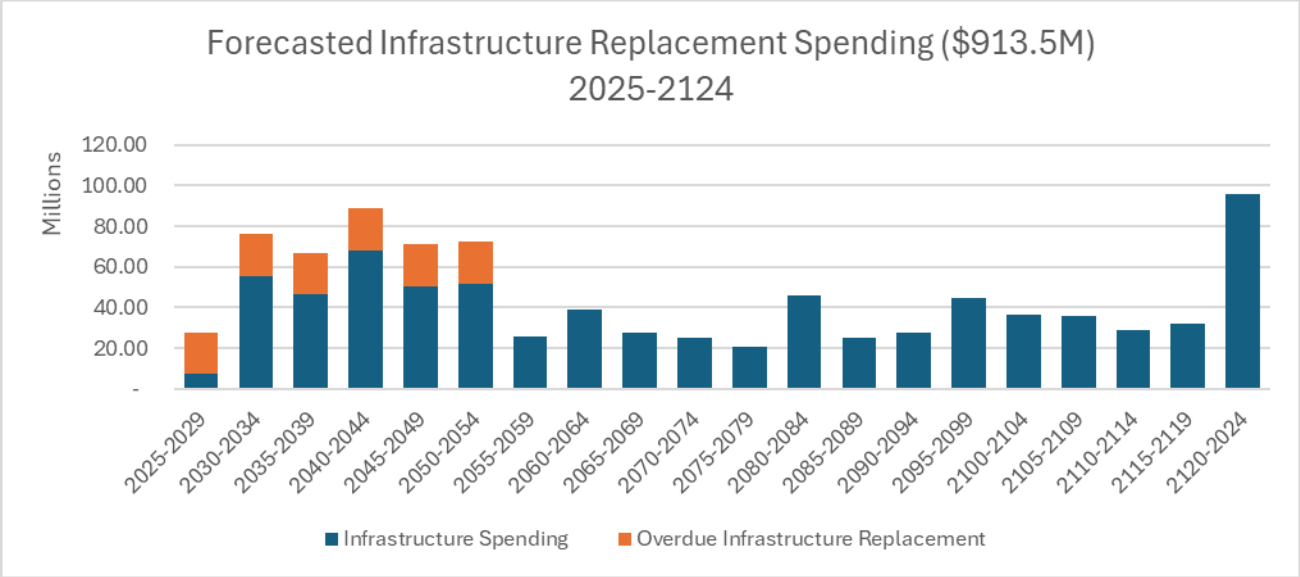
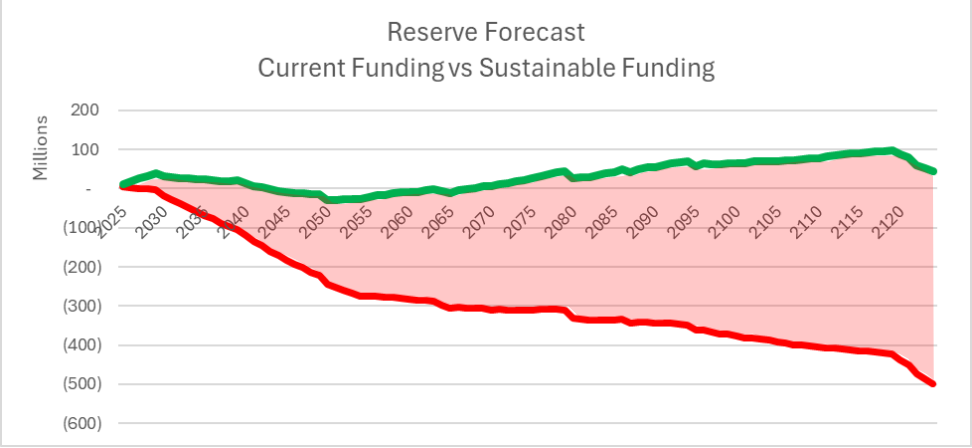


Figure 3: Forecasted Infrastructure Replacement Spending 2025-2124

Reserves / 100-Year Funding Gap Forecast 2025-2124

The annual sustainable funding required to replace the City's infrastructure is estimated to be between $8.3M and $9.0M. Current funding is approximately $4.1M, leaving an annual funding gap of between approximately $4.2M – 4.9M. Left unchanged, this may lead to a 100-year funding gap totaling, approximately, $490.4M.



100-Year Funding Gap: $490.4M

Figure 4: 100 Year Funding Gap/ Reserve Forecast - Current Funding vs Sustainable Funding

There are several options available to the City to address this funding gap:

1. **Increase funding in the short-term**: this option would allow costs to be spread out as evenly as possible over the life of the assets.
2. **Defer funding increases:** this option would compress the rate of increase necessary in the future.
3. **Abandon Capital Services or Reduce Capital Service Levels:** the City does not have many options to reduce or abandon capital services as most are essential. However, the City can choose to accept a higher-level of risk or reduced quality of capital service.

SECTION E: RECOMMENDATIONS

Funding Recommendations

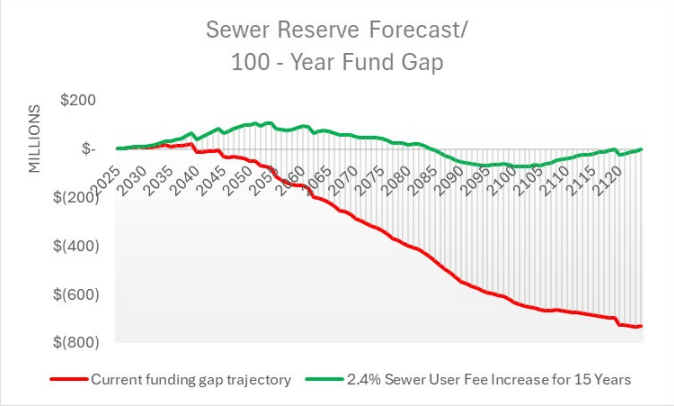
Sanitary Sewer Funding - Sewer Utility User Fee

The City currently aims to fund its sanitary utility expenses with sewer utility revenues which are primarily comprised of sewer fees and charges. The estimated annual funding gap for Sanitary sewer is $0.2M (table 8). Currently sewer user fees and charges are approximately $1.8M. This means rates will have to rise by approximately 10% (0.2M/1.8M) over the long run to address forecasted funding gaps. **Rate increases can be partially offset by interest revenue earnings if rate increases are implemented early.**

A few options are outlined below:

Option 1: Eliminate funding gap over 10-year period

Annual Sewer User Fee Increase %	1.0%
Investment Revenue earnings, 100-Years	$134.2M



The above increases do not include anticipation of the potential Joint Utilities Board outfall relocation project. This project would raise the required sewer infrastructure funding by an additional $450,000 to $1,700,000. See the Sanitary Sewer Infrastructure section in Section E for further information.

Water Infrastructure Funding – Water Utility User Fee

The City currently aims to fund its water infrastructure utility expenses with water utility revenues which are primarily comprised of water user fees and charges. The estimated annual funding gap for water infrastructure is $1.3M (table 8). Currently water user fees and charges are approximately $3.3M. This means rates will have to rise by approximately 38% (1.3M/3.3M) over the long run to address forecasted funding gaps. **Rate increases can be partially offset by interest revenue earnings if rate increases are implemented early.**

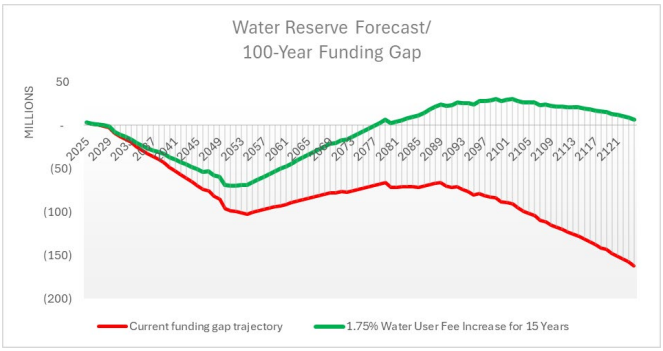
A few options are outlined below:

Option 1: Eliminate funding gap over 10-year period

Annual Water User Fee Increase %	3.00%
Investment Revenue earnings, 100-Years	$29.3M

Option 2: Eliminate funding gap over 15-year period

Annual Water User Fee Increase %	1.75%
Investment Revenue earnings, 100-Years	$27.3M



General Infrastructure Funding – Property Tax

The capital maintenance and replacement of general sources including property taxes, and infrastructure grants.

The estimated annual funding gap for general asset replacement is $3.3M (table 8). Currently property taxes are approximately $6.3M. This means property taxes will have to rise by approximately 52% (3.3M/6.3M) over the long run to address forecasted funding gaps. Rate increases can be partially offset by interest revenue earnings if rate increases are implemented early.

A few options are outlined below:

Option 1: Eliminate funding gap over 10-year period

Annual Property Increase %	3.25%
Investment Revenue earnings, 100-Years	$7.7M

Option 2: Eliminate funding gap over 15-year period

Annual Property Tax Increase%	1.90%
Investment Revenue earnings, 100-Years	$4.1M

Funding Recommendation One - Achieve Sustainable Funding Levels

To achieve sustainable annual funding, the following measures are recommended:

Recommendation 1a – Implement 15-years of 1.75% Water User Fee increases.

Recommendation 1b – Implement 10-years of 1% Sewer User Fee increases for existing infrastructure.

Recommendation 1c – Continue to increase Sewer User Fees by at least 3% annual in anticipation of the JUB Outfall project cost.

Recommendation 1d – Implement 15-years of 1.75% tax increases for general infrastructure replacement.

Funding Recommendation Two - Establish Infrastructure Renewal Only Reserves

The City has established many capital reserves that can be utilized for infrastructure renewal. However, funds in these reserves can be used for new infrastructure. Given the City's forecasted infrastructure funding gap, it is recommended that the City establish an infrastructure renewal only reserve or reserves.

Funding Recommendation Three – Canada Community Building Fund

The Administrative Agreement on the Canada Community-Building Fund in British Columbia (Agreement) took effect on April 1, 2024, and runs through 2034. CCBF proceeds are predictable and stable and therefore can form part of the City's infrastructure funding stream. Per the CCBF agreement, proceeds must be used for infrastructure, with some small exceptions. It is recommended that Council adopt a policy dedicated CCBF proceeds to infrastructure renewal only (as opposed to new infrastructure).

Funding Recommendation Four – Utility Capital Budget Surpluses

Currently when the City underspends its Utility Capital budget, surpluses are unappropriated. This means can be used for any purpose within the utility. It is recommended that unspent utility capital funds be set aside in a utility infrastructure reserve.

Funding Recommendation Five– Annual Capital Cost Index increases

Annually, inflation impacts the cost to replace infrastructure. If the City establishes targets for sustainable infrastructure replacement funding, these targets should rise with inflation. This would ensure that the progress toward sustainable funding is not eroded over time by inflation.

Policy Recommendations

Policy Recommendation One – Integrate Lifecycle Costing into Procurement Decisions

Procurement decisions utilize evaluation scoring based on numerous factors. Often financial considerations contribute between 30% and 60% to scoring. However, if a procurement decision only considers implementation or capital costs and fails to consider lifecycle costs, a more expensive salutation may be selected. For instance, the hypothetical software purchase example shown below:

Table 9: Acquisition Costing Method for Procurement

	Software #1	Software #2
Software Purchase	$50,000	$100,000
Implementation Costs	$20,000	$50,000
Total Acquisition Costs	$70,000	$150,000

At first glance, Software #2 appears to be more expensive and, therefore, would receive half the score of Software #1. However, when evaluated from a lifecycle costing perspective, Software #2 is much less expensive:

Table 10: Lifecycle Costing Method for Procurement

		Software #1	Software #2
	Software Purchase	$50,000	$100,000
	Implementation Costs	$20,000	$50,000
A	Total Acquisition Costs	$70,000	$150,000
B	Annual Licensing Costs	$20,000	$10,000
C	Expected Useful Life	10 years	15 years
D	Total Licensing Cost per Useful Life (BxC)	$200,000	$150,000
E	Total Lifecycle Costs (A+D)	$270,000	$300,000
F	Annualized Lifecycle Costs (E/C)	$27,000 per year	$20,000 per year

Notice that under the Acquisition Costing Procurement Method in table 1, Software #2 appears to be more than twice as expensive. However, Software #2 is found to be 25% less expensive when annual lifecycle costs are calculated.

It is therefore recommended that the City's Purchasing Policy be amended to encourage staff to consider lifecycle costs when scoring procurement processes.

Policy Recommendation Two – Integrate Lifecycle Costing into Budget Deliberations

When capital expenditure decisions are made during budget deliberations, it is imperative that Council consider the full lifecycle costs of the capital. This would include the initial capital outlay (construction and acquisition costs), lifetime operating, and maintenance costs. Council should also consider what capital service level vision they have for the infrastructure. For instance, when a road is under construction, Council should decide what Pavement Condition Index (PCI) score staff are expected to maintain.

Investment Recommendations

Investment Recommendation One – Align long-term cash flows with long-term investment portfolio horizon

Aligning the City's investment portfolio with long-term cash flow projections will allow the City to generate the highest investment return. Investment returns can significantly reduce the City's need to raise taxes and utility fees in order to fund infrastructure replacement.

SECTION F: DETAILED INVENTORY OF INFRASTRUCTURE

Vehicles & Equipment

Duncan maintains a vehicle inventory of approximately 73 units which service the Engineering and Public Works Department, General Administrative staff, and Fire Department. The replacement value of the fleet is estimated to exceed $12.7M. The vehicles are approximately 56% through their lifecycle on average.

Vehicles & Equipment Inventory

Table 11: Vehicle Inventory Overview

Structure	Service Life	Quantity	Current Replacement Cost	Annualized Cost	% Consumed
General Administrative/ Fire/ Public Works	14 to 17 years	≈ 73	$12.7M	$750,600	56.3%
Total		≈ 73	$12.7M	$750,600	56.3%

Vehicles Condition Assessment

Table 12: Vehicle Condition Assessment

Asset	Overall	Condition and Performance	Capacity vs. Need	Funding vs. Need
General Administrative	B+	B	B	A
Engineering & Public Works	B+	B	B	A
Fire Department	A-	B	A	A

Vehicles Spending Forecast

Table 13: Vehicle Funding Snapshot

Forecasted Spending, Vehicle Replacement 202-2124	$75.0M
Sustainable Annual Funding	$750,600

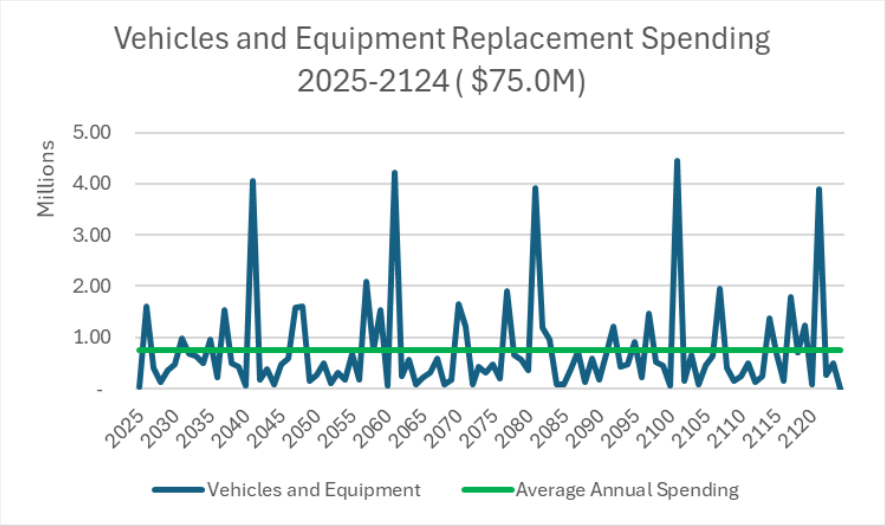


Figure 5: Vehicle Replacement Spending 2025-2124

Buildings

The City maintains a small portfolio of Buildings to house its Municipal Operations. The list below includes buildings not exclusively owned by the City, such as the Cowichan Aquatic Centre. The City has an indirect stake in this building. The Plan assumes that the City will want to continue to provide existing capital services. Therefore, buildings with an indirect stake and potential financial implications are included in the modelling and forecasts.

Buildings Inventory

Table 14: Building Inventory Overview

Structure	Service Life	Quantity	Current Replacement Cost	Annualized Cost
Municipal Hall[1]	Heritage	1,337 m^2	See Note 1 below	$106,300
Public Works Buildings	80 years	975 m^2	$3.3M	$41,400
Fire Department[2]	80 years	926 m^2	3.0M	38,000
Parks & Recreation	80 years	1,549 m^2[3]	7.7M[4]	67,300
Other		683 m^2	2.3M	28,000
Building component capital maintenance				$264,100
Public Library - Included in cost of Cowichan Aquatic Centre				
Total		5,470 m^2	$16.3M	$545,100

1. Municipal Hall is a heritage building so it is assumed it will not be replaced but capital maintenance costs are forecasted in perpetuity.
2. The replacement forecast assumed replacing 'like-for-like, however, a fire hall rebuild would likely be to a higher standard and therefore a higher replacement cost. Assuming the same square footage, replacement cost could between $5.9M - $8.6M.
3. Does not include Cowichan Aquatic Centre square footage.
4. Duncan owns 6.27% of Cowichan Aquatic Centre – this value includes 6.27% total replacement cost estimate of $37M

Buildings Condition Assessment

Table 15: Building Condition Assessment

Asset	Overall	Condition and Performance	Capacity vs. Need	Funding vs. Need
Municipal Hall	B-	B	B	D
Public Works Building	B	B+	B+	D
Fire Hall	B	B+	B	D
Parks & Recreation	B	B+	B+	D
Other	B	B+	B+	D

Buildings Spending Forecast

Forecasted Spending, Buildings 2025-2124	$48.7M
Sustainable Annual Funding	$545,100

Spending on building replacement and capital maintenance for the next 100-years is expected to be $48.7M (2024 dollars).

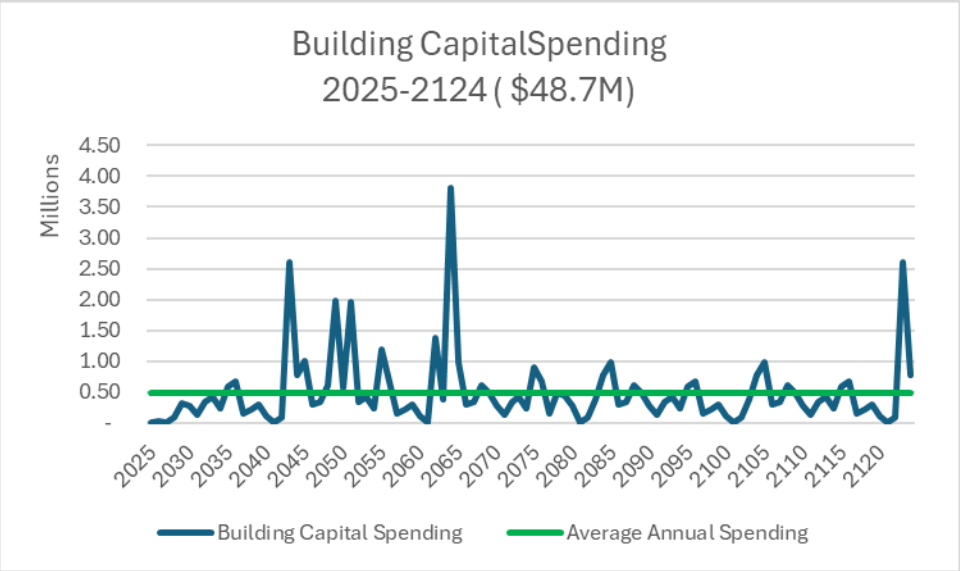


Figure 6: Forecasted Spending, Buildings 2023-2122

Road Infrastructure

The City maintains a significant road network, including approximately 275,000 square meters of asphalt and 89,200 square meters of sidewalk.

Road Inventory

Table 16: Road Inventory Overview

Structure	Service Life (Top/Base)	Quantity	Current Replacement Cost[1]	Annualized Cost
Local	25/90	181,200 m^2	$45.4M	$903,600
Collector	25/80	20,400 m^2	5.8M	137,700
Arterial	25/80	73,500 m^2	21.9M	507,900
Total Roads		275,200 m^2	73.1M	$1,549,200
Curb & Gutter	80 years	52.8 km[2]	13.5M	169,100
Sidewalk	80 years	89,200 m^2	27.4M	342,300
Streetlights	25 years	26 each	0.1M	1,400
Traffic Signals	25 years	17 each	1.3M	44,200
Total			115.4M	$2,106,200

1: Current replacement costs represent the value for a full reconstruction which includes top and base layers. However, over the lifespan of a road, the surface may be reconstructed 2-4 times.
2: This is measured for each side of the road. For example, 1 km of road with curb and gutter on both sides would measure as 2 km of curb and gutter.

Road Condition Assessment

The City conducted a Pavement Condition Assessment (PCI) as a basis for establishing a pavement budgeting model. The PCA produces a Pavement Condition Index (PCI) rating for sections of road. The assessment yielded an average PCI score of above 81 which is within the 'very good' range. Only 3% of the pavement area assessed resulted in a 'fair' or lower score.

Table 17: Road Condition Assessment

Asset	Overall	Condition and Performance/PCI	Capacity Vs. Need	Funding Vs. Need
Road	B	A/81+	A	D
Curb & Gutter	C+	B/N/A	A	D
Sidewalk	C	B/N/A	B-	D
Traffic Signals	C+	B/N/A	A	D
Streetlights	C+	B/N/A	A	D

Road Spending Forecast

Forecasted Spending, Road Replacement 2023-2122	$246.5M
Sustainable Annual Funding	$2,106,200

Modelling indicates that the City may spend approximately $246.5M on roads over the next 100-years. Approximately $25.5M of this amount is for a backlog of road segments that have reached or exceeded their estimated useful lives.

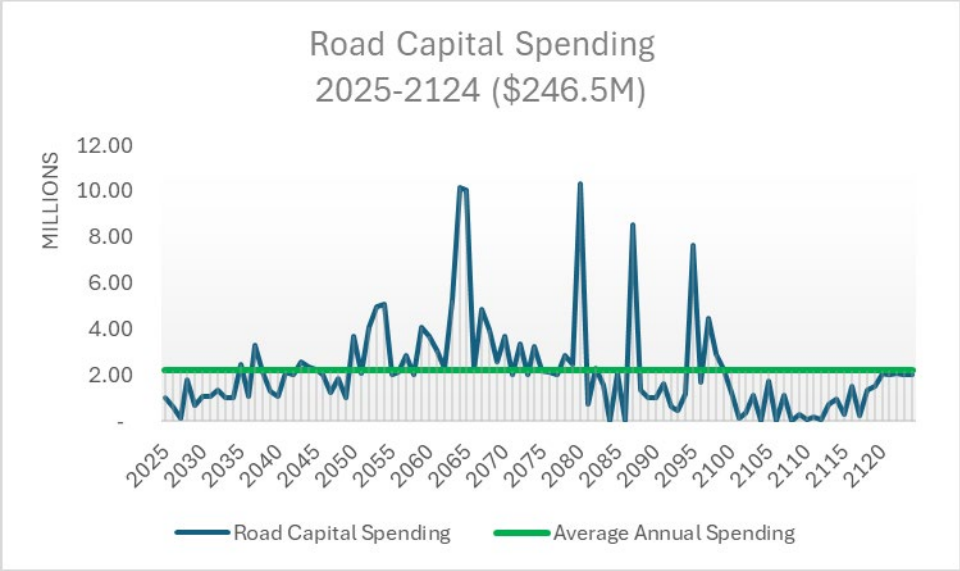


Figure 7: Forecasted Spending, Roads 2025-2124

Drainage

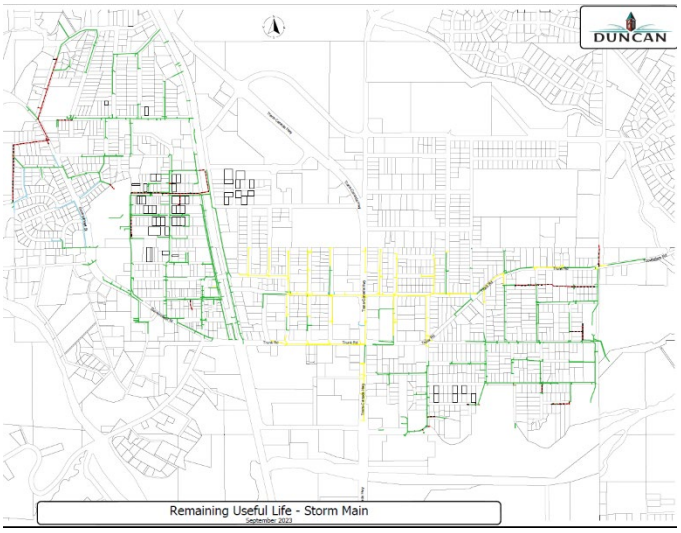
Drainage Inventory

Table 18: Drainage Inventory Overview

Structure	Service Life	Quantity	Current Replacement Cost	Annualized Cost
Mains	75-100 years	27.9 km	$76.9M	$982,000
Total			$76.9M	$982,000

Drainage Condition Assessment

The City had materials testing completed in 2021 to help establish the estimated useful lives of its storm main pipe. This forms the basis of the useful lives established for this engagement.



- Expired
- Urgent (>0 and <5 Years Left)
- Poor (>=5 and <10 Years Left)
- Fair (>=10 and <15 Years Left)
- Good (>=15 and <20 Years Left)
- Excellent (>= 20 Years Left)

Table 19: Drainage Condition Assessment

Asset	Overall	Condition and Performance	Capacity Vs. Need	Funding Vs. Need
Mains	B-	B+	A-	D
Laterals	B-	B+	A-	D
Manholes	B-	B+	A-	D

Drainage Spending Forecast

Forecasted Spending, Drainage 2023-2122	$106.5M
Sustainable Annual Funding	$982,000

Modelling indicates that the City may spend approximately $106.5M on Drainage infrastructure replacement over the next 100-years. The City's drainage infrastructure is estimated to be 77.8% through its useful life.

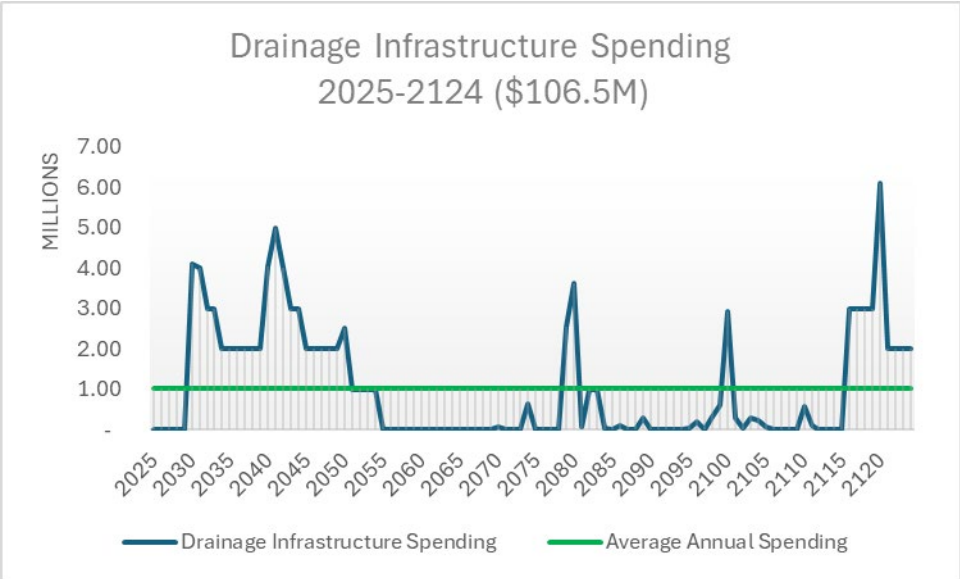


Figure 8: Forecasted Spending, Drainage 2023-2122

Sanitary Sewer Infrastructure

The City maintains and operates a system of underground pipes to collect sewer for treatment at the Joint Utilities Board (JUB) Lagoons. The JUB assets are jointly owned by the Municipality of North Cowichan (54%), Duncan (31%), Cowichan Valley Regional District (13%), and Cowichan Tribes (2%).

Figure 9: Sanitary Sewer System

Sanitary Sewer Inventory

Table 20: Sanitary Sewer Inventory Overview

Structure	Service Life	Quantity	Replacement Cost	Annualized Cost
Mains	50-100 years	29.1 km	$74.7M	$911,300
Pump Stations	50 years	4 ea.	6.1M	81,000
JUB Infrastructure[1]	50-100 years	17,300 m^3 per day	1.6M	31,000
Total			$82.4M	$1,023,300

1: Estimated historical cost of Joint Utilities Board assets are approximately $5M x 31% Duncan ownership share. This does not include the asset retirement obligation which is currently estimated to be over $50M (approx. 16.6M Duncan share). This figure also does not include forecasted costs related to the pending Outfall Relocation Project which will be significant.

Sanitary Sewer Condition Assessment

The City had materials testing completed in 2021 to help establish the estimated useful lives of its asbestos-cement and cast-iron pipe. This forms the basis of the useful lives established for this engagement.

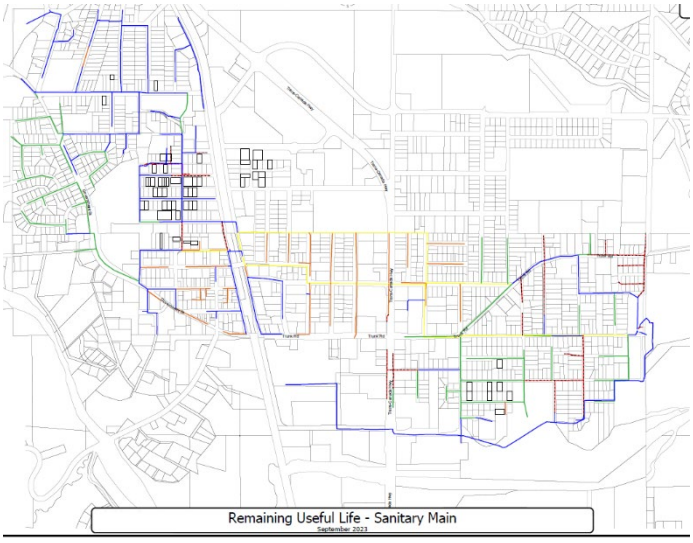


Table 21: Sanitary Sewer Condition Assessment

Asset	Overall	Condition and Performance	Capacity Vs. Need	Funding Vs. Need
Mains	B	B-	A-	A[1]
Lift Stations	B	B-	A-	A[1]

1: Funding rating is based on existing sewer infrastructure and does not include contemplation of the potential Joint Utilities Board Outfall Relocation Project costs. Including these costs would reduce the rating to an F-D range.

Sanitary Sewer Spending Forecast

Forecasted Spending, Sanitary Sewer 2023-2122	$104.1M
Sustainable Annual Funding	$1,023,300
Current Annual Funding	$844,000
Annual Funding Gap	$179,300
100-year Funding Gap	$17.9M

Modelling indicates that the City may spend approximately $103.1M on Sanitary Sewer replacement over the next 100 years. Current funding levels are close to sustainable levels, however, much of this funding is anticipated to be needed for the JUB Outfall relocation project. Consequently, Council may which to increase funding beyond the annualized $1,023,300 level.

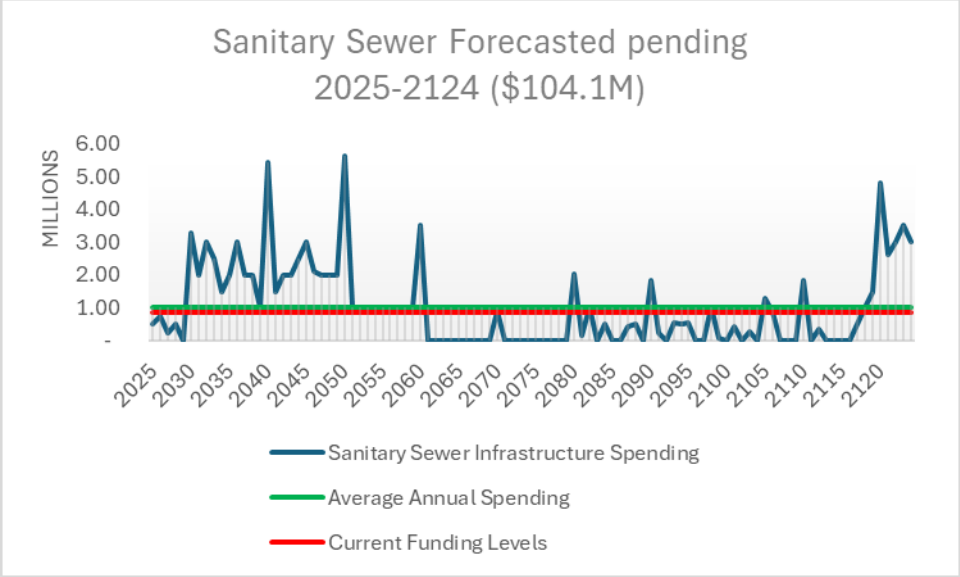


Figure 10: Forecasted Spending, Sanitary Sewer 2025-2124

JUB Outfall Relocation Project

The City will need to increase sewer user fees to support the capital and lifecycle costs of the proposed new JUB outfall relocation project. The current sewer user fee is close to sustainable if it only supports the cost of existing infrastructure. However, assuming an Outfall Relocation Project cost of $29,500,000 ($95,000,000 total x 31% Duncan share), annual debt servicing could be $1.7M. This means the infrastructure sewer user fees would need to rise from the current $844,000 to $2,723,300 (1,023,300 + 1,700,000).

Current annual sustainable funding for **existing** sewer infrastructure	1,023,300	A
New annual funding required for debt-funded new JUB Outfall Relocation Project	1,700,000	B
Sustainable annual funding for existing infrastructure + Outfall Relocation Project	2,723,300	C
Current annual sustainable funding for sewer infrastructure replacement	844,000	D
Funding gap for Outfall Relocation Project and existing infrastructure (C-D)	1,879,300	E
Current annual sewer user fee revenue	1,175,200	F
% sewer user fee increase required for existing infrastructure + Outfall Relocation Project (E/F)	160%	G

Should JUB secure an infrastructure grant in the amount of 73%, debt proceeds required would fall from 29,500,000 to 8,000,000. This would result in a total sewer user fee increase falling from 160% down to 54% as demonstrated below:

Current annual sustainable funding for **existing** sewer infrastructure	1,023,300	A
New annual funding required for debt-funded new JUB Outfall Relocation Project	450,000	B
Sustainable annual funding for existing infrastructure + Outfall Relocation Project	1,473,300	C
Current annual sustainable funding for sewer infrastructure replacement	844,000	D
Funding gap for Outfall Relocation Project and existing infrastructure (C-D)	629,300	E
Current annual sewer user fee revenue	1,175,200	F
% sewer user fee increase required for existing infrastructure + Outfall Relocation Project (E/F)	54%	G

Water Infrastructure

The City provides potable water using four deep wells and two reservoirs. Water is extracted from a sub-river aquifer near the Cowichan River. The City's water distribution system covers approximately 5 square kilometers, serving over 15,000 people including customers in Duncan, the Municipality of North Cowichan, the Cowichan Valley Regional District and Cowichan Tribes land.

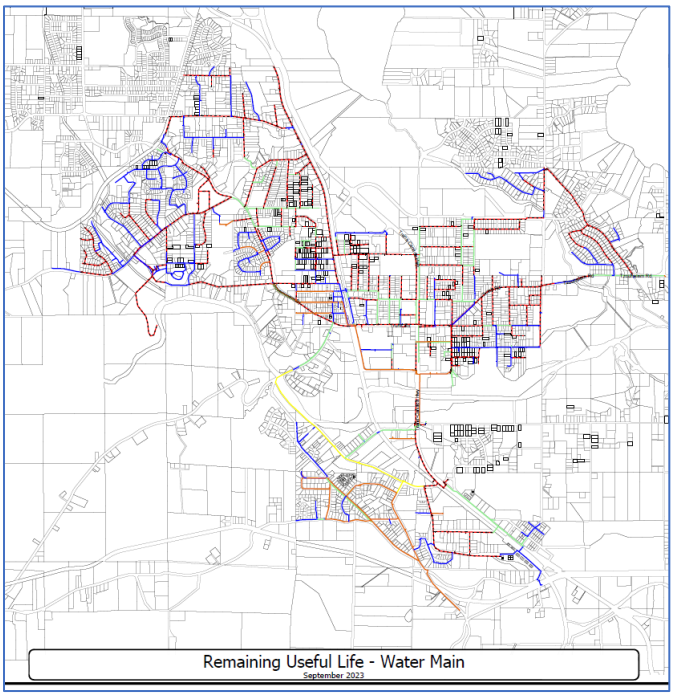
Water Infrastructure Inventory

Table 22: Water Infrastructure Inventory Overview

Structure	Service Life	Quantity	Current Replacement Cost	Annualized Cost
Mains	50-100 years	82.8km	$208.6M	$2,746,100
Lift Stations		6 ea.	7.2M	96,500
Reservoir Buildings	50-75years	3 ea.	5.0M	61,900
Total			$220.8M	$2,904,500

Water Infrastructure Condition Assessment

The City had materials testing completed in 2021 to help establish the estimated useful lives of its asbestos-cement and cast-iron pipe. This forms the basis of the useful lives established for this engagement. The useful lives selected for water mains are typically lower than estimated physical life as the City does not wish to run its water infrastructure to failure. Rather, the City aims to mitigate the risk of failure. Note the large proportion of pipe estimated to be near or past its desired useful life.



- Expired
- Urgent (>0 and <5 Years Left)
- Poor (>=5 and <10 Years Left)
- Fair (>=10 and <15 Years Left)
- Good (>=15 and <20 Years Left)
- Excellent (>= 20 Years Left)

Table 23: Water Infrastructure Condition Assessment

Asset	Overall	Condition and Performance	Capacity Vs. Need	Funding Vs. Need
Mains	C+	C	A-	D
Lift Stations/Reservoirs	C+	C	A-	D

Water Infrastructure Spending Forecast

Forecasted Spending, Sanitary Sewer 2025-2124	$330.8M
Sustainable Annual Funding	$2,904,600

Modelling indicates that the City may spend approximately $330.8M on Water Infrastructure replacement over the next 100 years. The City infrastructure is estimated to be 40.2% through its estimated useful life.

The City's water infrastructure comprises the largest component of the City's asset inventory (42%) and 100-year spending forecasts (36%). Thus, establishing sustainable funding levels for the water utility is a critical objective.

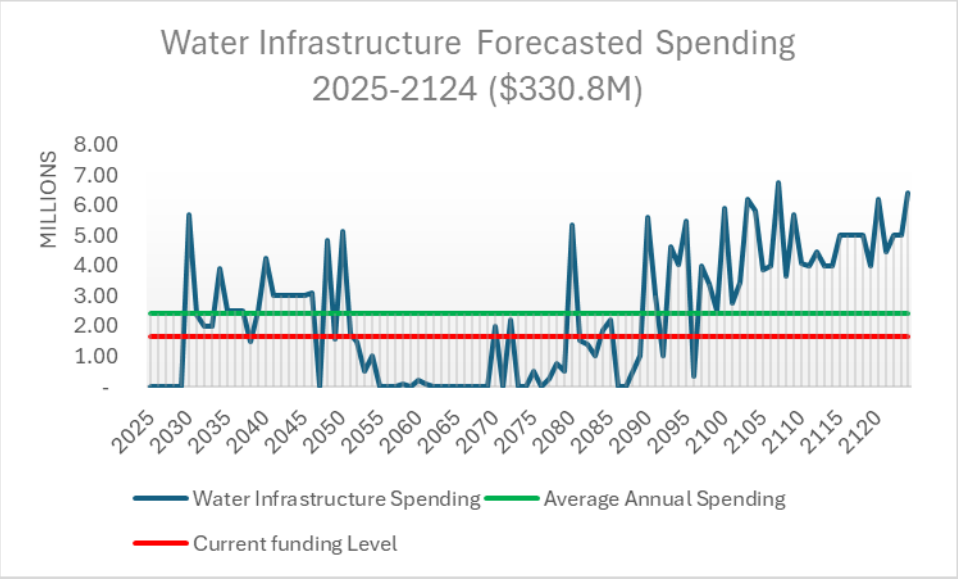


Figure 11: Forecasted Spending, Water Infrastructure 2025-2124

GLOSSARY OF TERMS

Annual Lifecycle Costs: Annual lifecycle costs include the cost to acquire or construct a Tangible Capital Asset, plus all operating and maintenance costs incurred over the life of the asset.

Canada Community Building Fund: The Administrative Agreement on the Canada Community-Building Fund in British Columbia (Agreement) took effect on April 1, 2024. The tripartite Agreement between Canada, British Columbia, and UBCM replaces the 2014-2024 Agreement and provides the administrative framework for the delivery of the Canada Community-Building Fund (formerly the federal Gas Tax fund) to local governments and other recipients in British Columbia from 2024 to 2034.

Forced Growth: Relates to costs that the City must incur to continue to provide existing services at the same service level. For instance, collective agreement increases, inflation, and contractual increases are forced growth factors. Forced growth is not increases to service delivery costs resulting from elective changes or enhancements to existing programs. In the context of capital budgeting, forced growth refers to the inflationary pressure resulting in increased construction costs.

Grey Infrastructure: Built infrastructure that relates to stormwater, drainage, or flood mitigation.

Municipal Finance Authority: The Municipal Finance Authority of British Columbia (MFA) was created in 1970 to contribute to the financial well-being of local governments throughout BC. The MFA pools the borrowing and investment needs of BC communities through a collective structure and can provide a range of low-cost and flexible financial services to clients equally, regardless of the size of the community. The MFA is independent of the province and operates under the governance of a Board of Members appointed from the various Regional Districts within BC.

Joint Utilities Board: The Joint Utilities Board is a collaborative entity that manages the joint financing, construction, operation, and maintenance of certain municipal utilities and sewerage facilities for the benefit of both the City of Duncan and the Municipality of North Cowichan. The JUB oversees the sewage treatment plant, which is a hybrid

Pavement Condition Index (PCI): This is an index that assigns a score between 0 and 100, indicating the general condition of pavement.

Tangible Capital Asset (TCA): Tangible capital assets are non-financial assets having physical substance that:

I. are held for use in the production or supply of goods and services, for rental to others, for administrative purposes or for the development, construction, maintenance, or repair of other tangible capital assets,
II. have useful economic lives extending beyond an accounting period,
III. are to be used on a continuing basis, and
IV. are not for sale in the ordinary course of operations.

APPENDIX A: BASIS FOR CONDITION ASSESSMENT

Since it is unrealistic to scientifically rate every asset for a high-level Infrastructure Condition Report, a modified American Society of Civil Engineers (ASCE) alphanumeric system was employed for each asset component grouping. Assets are evaluated on a simplified component-by-component basis. Although every rating system is subjective, this process improves accuracy since it incorporates the anecdotal knowledge of the employees with respect to the assets.

The assets (by individual components) are rated using a two-step process in order to ensure consistency, focus, and detail:

Step 1: The first step was to rate the current condition to start understanding the makeup of the overall rating and identify the potential problems the managers were facing. This detailed rating takes into consideration three factors:

1. Condition and Performance,
2. Capacity vs. Need, and
3. Funding vs. Need.

Condition and Performance: This first criterion characterizes the current physical condition of infrastructure. The condition index scale below is a general guideline for grading under this category:

A	**Excellent:** No noticeable defects. Some aging or wear may be visible
B	**Good:** Only minor deterioration or defects are evident. Still functions.
C	**Fair:** Deterioration or defects evident, but function not significantly affected.
D	**Poor:** Serious deterioration in at least some portion of the structure. Function is inadequate.
F	**Failed**: No longer functional. A general failure or complete failure of a major structural component.

Capacity vs. Need: For most infrastructure categories, this second criterion relates to the demand on a system, such as volume or use, versus its design capacity. This is a critical evaluation criterion for municipalities that are facing ongoing population and community growth. It is also important because a particular asset may be in excellent condition and performing well, but it is simply too small to meet the needs. A grading scale in 10-percent increments is suggested as a guideline for purposes of intuitive assessment as follows:

A	Systems that can support 100% of demand
B	Systems that can support 90 - 99% of demand
C	Systems that can support 80 - 89% of demand
D	Systems that can support 70 - 79% of demand
F	Systems that can support less than 70% of demand

Funding vs. Need: The third evaluation criterion reflects the status of funding dedicated to maintaining, replacing, and improving the current condition of existing infrastructure.

Infrastructure systems require funding that is dedicated, indexed, long-term, and, most importantly, sustainable. The primary measure is the amount of funding provided versus the

estimated funds needed to meet or maintain the community's desired quality or performance standard.

Dedicated funds, such as user fees and development charges, need to be applied only to infrastructure systems for which they are raised. Indexing means that funds need to increase as use of the system increases, or as the cost of providing the service increases.

Maintenance and construction costs also need to be considered in the evaluation of funding. Steady funding provides for maintenance that extends the life of infrastructure. Long-term, multi-year funding plans should account for growth estimates so that projects can be designed and constructed in anticipation of needs where it is logical and feasible to do so, and not simply in reaction to inadequate capacity or problems caused by poor maintenance.

This grading system is used as a guideline for purposes of intuitive assessment:

A	90 to 100% of need
B	80 to 89% of need
C	70 to 79% of need
D	41 to 69% of need
F	under 40%

Step 2: The second step was to combine the detailed rating into a single blended rating that represented the overall score for that component. This was then combined into an overall score for the asset class for purposes of the Report Card. An overall 2024 Report Card Rating is then assigned to each asset category based on a consolidation of Condition & Performance, Capacity vs. Need and Funding vs. Need criteria. Each factor equally contributes to the overall weighting. In the future, the City may want to weigh the contribution of one or more factors to better reflect their relative impact on sustainability or other factors related to the service itself.

APPENDIX B: SENSITIVITY ANALYSIS

A sensitivity analysis has been conducted to help authenticate the broad findings of this review. Overall, the sensitivity analysis confirms that a significant funding gap exists that will need to be addressed by the City now or in the future.

For the sensitivity analysis, useful lives were increased by 25% which pushed all estimated useful lives beyond the NAMs recommended ranges. The results are summarized below.

Sensitivity Analysis Scenario A	Useful lives for sanitary sewer, storm, and roads were increased by 25%
Sensitivity Analysis Scenario B	Useful lives for sanitary sewer, storm, and roads were decreased by 25%

	Plan Findings	Sensitivity Scenario A	Sensitivity Scenario B
Annual Sustainable Funding	8.3M	7.6M	9.5M
Annual Funding Gap	4.2M	3.5M	5.4M

APPENDIX C: SUMMARY OF RECOMMENDATIONS

Funding Recommendations:

- Funding Recommendation 1a – Implement 15-years of 1.75% Water User Fee increases.
- Funding Recommendation 1b – Implement 10-years of 1% Sewer User Fee increases for existing infrastructure.
- Funding Recommendation 1c – Continue to increase Sewer User Fees by at least 3% annual in anticipation of the JUB Outfall project cost.
- Funding Recommendation 1d – Implement 15-years of 1.75% tax increases for general infrastructure replacement.
- Funding Recommendation Two - Establish Infrastructure Renewal Only Reserves
- Funding Recommendation Three – Establish a policy that dedicates Canada Community Building Fund proceeds to infrastructure renewal
- Funding Recommendation Four – Establish a policy that transfers unspent Utility Capital Budget Surpluses to utility infrastructure reserves.
- Funding Recommendation Five– Increase annual infrastructure replacement funding by a factor equal to annual Capital Cost Index increases
- Policy Recommendation One – Integrate Lifecycle Costing into Procurement Decisions
- Policy Recommendation Two – Integrate Lifecycle Costing into Budget Deliberations
- Investment Recommendation One – Align long-term cash flows with long-term investment portfolio horizon

LIST OF FIGURES AND TABLES