City of Colwood

Sustainable Infrastructure Replacement Plan

Colwood

The City of Colwood sits on the ancestral lands of Teechamista and the Lekwungen-speaking people of the Songhees and Esquimalt Nations.

We are honoured to have the opportunity to build strong working relationships with local Nations and commit to continued learning, openness, humility and respect. We endeavor to walk softly on these ancestral lands of the Songhees and Esquimalt families.

Acknowledgements

The Sustainable Infrastructure Replacement Plan (the Plan) was prepared by David Morrical, CPA, CGA and Christopher Paine, CPA, CGA with FIT Local Government Consulting Inc. Jenn Hepting, Director of Finance, was the project sponsor and provided contributions and oversight. This project has had significant input from the City of Colwood staff team as well as consultants, specifically:

Data Contributors/Technical Reviewers

- Jenn Hepting, CPA, Director of Finance, City of Colwood
- Brian Goble, Manager of GIS Data, City of Colwood
- Kathy McLennan, CPA, Manager of Accounting, City of Colwood
- Ren Ashcroft, CPA, Infrastructure Accountant, City of Colwood
- Lori Cyr, CPPB, Purchasing, City of Colwood
- John Russell, Deputy Director of Public Works, City of Colwood
- Gordon Beauvillier, Manager of Parks, City of Colwood
- Joshua Baylis, P.Eng, Manager of Engineering, City of Colwood
- Tanner Northrup, Manager of Roads and Utilities, City of Colwood
- Ron Dietrich, Operations Manager, West Shore Parks & Recreation

Consultants

- Ian Whitehead, Vice President, McElhanney Consulting Services Ltd

The Sustainable Infrastructure Replacement Plan was endorsed by Colwood Council in 2025.

Contents

Acknowledgements 3
Data Contributors/Technical Reviewers 3
Executive Summary 6
Introduction 6
Purpose of the Plan 6
Key Findings 7
Key Recommendations of the 8
2024 Sustainable Infrastructure Replacement Plan 8
Scope of Work, Assumptions, and Limitations 9
Scope of Work 9
Key Assumptions 9
Sources of Information 12
Section A: Asset Management in Colwood 13
Purpose of the Plan – Alignment of Long-Term Funding 13
Introduction to Asset Management 13
Asset Management Policy 14
Council Direction – Asset Management 15
Section B: Overview of Asset Inventory 17
Inventory Valuation 17
Section C: Infrastructure Funding 19
Annual Funding Levels 19
Summary of Asset Condition Assessments 20
Summary of Reserves (Accumulated Funding) 21
Sustainable Annual Funding vs Actual 21
Section D: Modeling 23
Infrastructure Replacement Forecast 2024-2123 23
Reserves & Debt Forecast 2024-2123 23
Impact of Inflation 24
Section E: Options & Recommendations 26
Funding Options & Recommendations 26
Policy Recommendations 30
Life-cycle Costing Policy Recommendations 30
Investment Policy Recommendations 33
Forced Growth Policy Recommendations 34
Section F: Detailed Inventory of Infrastructure 35
Nature Assets 35
Land and Park Inventory 36
Rivers, Creeks, Streams 38
Trees 38
Foreshore 39
Park Structures 39
Park Structures Inventory 39
Park Structures Condition Assessment 40
Park Structures Spending Forecast 40
Vehicles 41
Vehicles Inventory 41
Vehicles Condition Assessment 41
Vehicles Spending Forecast 41
Buildings 43

Buildings Inventory....43
Buildings Condition Assessment....44
Buildings Spending Forecast....44
Road Infrastructure....46
Active Transportation Plan....46
Road Inventory....46
Roads Condition Assessment....48
Road Spending Forecast....48
Drainage....50
Drainage Inventory....50
Drainage Condition Assessment....51
Drainage Spending Forecast....51
Sanitary Sewer Infrastructure....52
Sanitary Sewer Inventory....52
Sanitary Sewer Condition Assessment....53
Sanitary Sewer Spending Forecast....53
Glossary of Terms....55
Appendix A: Basis for Condition Assessment....57
Appendix B: Sensitivity Analysis....60
Appendix C: Summary of 2024 SIRP Recommendations....61
Appendix D: Useful Life Assumptions....62
Appendix E: Recommendations from 2019 SIRP and their Action Status....63
Appendix F: List of Figures & Tables....65

Executive Summary

Introduction

Council provided direction for Asset Management capacity building through the 2024-2027 Colwood Strategic Plan. The Strategic Plan includes tactics to build plans for infrastructure recapitalization and build long-term financial models to understand and fund operational and capital requirements. The Sustainable Infrastructure Replacement Plan meets this directive.

The City of Colwood continues to grow at a rapid rate. With that it is necessary to review and ensure that the City's future costs of asset replacement will be adequately and evenly funded over time. It is with this in mind that the 2024 Sustainable Infrastructure Replacement Plan (the Plan) provides insight to what the effect of forecasted replacement costs versus anticipated reserve fund contributions will be over a reasonably long period of time, 100 years. The Plan is furtherance to the City's first Sustainable Infrastructure Replacement Plan 2019. Based on that Plan, Council resolved funding direction, based on financial recommendations. Those recommendations and the effects thereof will be part of this 2024 Sustainable Infrastructure Replacement Plan.

Purpose of the Plan

The Plan was primarily developed to support sustainable service delivery of the City of Colwood's existing capital services. It's important to consider the Plan's definition of 'sustainable infrastructure', which is that the City's existing assets can be replaced or renewed without issuing debt. Refer to the Plan's Glossary of Terms for additional terms. In order for the City of Colwood capital services to remain sustainable, appropriate funding must be dedicated for infrastructure replacement; this funding is set aside in reserves for purposes of sustainable infrastructure. Such activity is referred to as sustainable infrastructure replacement funding. The Plan estimates sustainable funding levels by modelling estimated replacement costs over a 100-year timeframe.

Key Findings

The Plan has the following key findings:

Inventory Valuation: The estimated replacement costs for the City of Colwood's assets are approximately $739.6M. Approximately $601.2M of these assets are depreciable and will need to be replaced.

- **Infrastructure Co**
- **Condition:** Overall, the City of Colwood's assets are in good condition as the infrastructure is relatively new. Depreciable assets are estimated to be 32.8% consumed on average.
- **Spending Forecasts:** Overall the City is forecasted to spend approximately $876M over the next 100 years to replace existing assets.
- **Annual funding levels**: Annual funding levels are not providing sustainable funding for the ongoing replacement of the depreciable assets over the 100 years evaluation period. Annual funding is estimated to be approximately 44.8% sustainable (or 72.3.% sustainable if tax increases continue and investment returns can be leveraged).
- **100-Year funding Gap:** Modelling indicates that current funding levels will result in a $530.0M 100-year funding gap.
- **Investment Revenue:** The City can fund $267M of the required 100-year infrastructure replacement funding using investment revenues generated over the 100-year term, by increasing annual property tax and utility fee funding to sustainable levels by 2029.

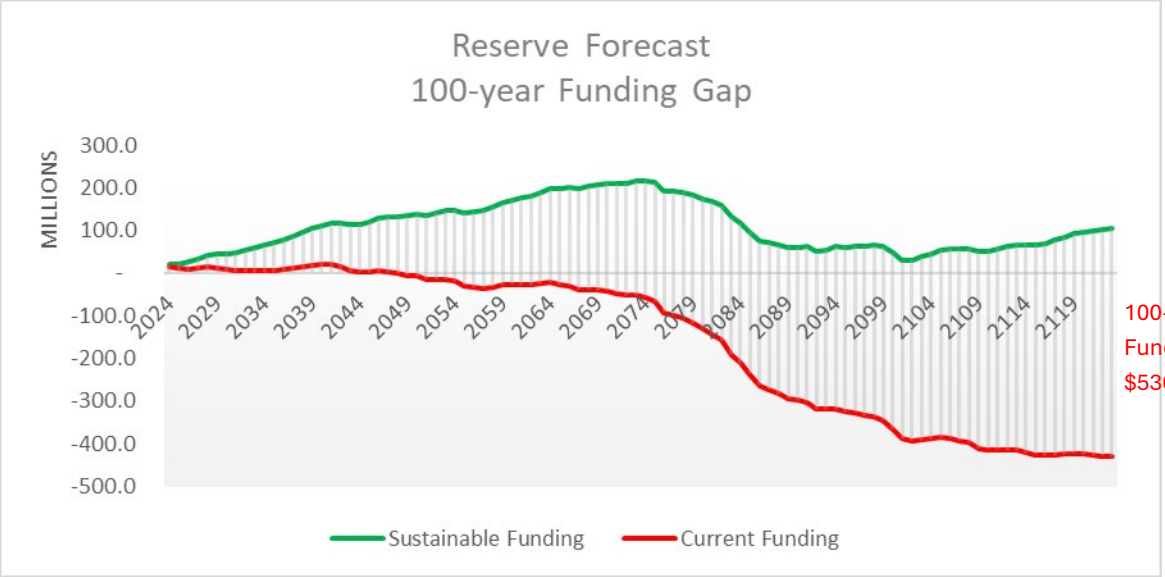


FIGURE 1: 100 YEAR FUNDING GAP FORECAST

- **Natural Assets:** The City of Colwood has a rich inventory of natural assets including parkland, trees, creeks, and shoreline. For instance, the City of Colwood has approximately 42km of creeks that provide drainage services. The annual lifecycle costs of grey infrastructure alternatives to creeks in the City of Colwood is estimated to be $0.2M per year with a replacement value of $54M.

- **Sensitivity Analysis:** A sensitivity analysis was conducted to help authenticate the broad findings of this review. Broad findings include estimated annual sustainable funding, annual funding gap, and the cumulative infrastructure funding gap. Overall, the sensitivity analysis confirms Colwood is facing an annual funding gap that will need to be addressed now or at some point in the future. Sensitivity modelling indicates an annual funding gap of between $2.3M (optimistic) and $7.3M (pessimistic).

Key Recommendations of the 2024 Sustainable Infrastructure Replacement Plan

The Plan contains the following key recommendations:

1. **Increase funding to sustainable levels**:
    a. Implement a 12.25% increase to utility fees each year for the next 3 years.
    b. Increase property taxes by 5.50% to achieve sustainable annual funding for assets funded by property tax excluding the RCMP Detachment and Public Works Operations Facility.
    c. Increase property taxes to fund the debt servicing required for the Public Works Operations Facility, should approval of the electors be achieved.
    d. Levy a regional district property tax to fund the RCMP Detachment Facility, should approval of the electors be achieved.
2. **Annual forced growth:** Establish a policy within the annual Financial Plan bylaw to increase infrastructure replacement reserve funding by forced growth annually.
3. **Establish Dedicated Funding Streams for Major Asset Classes.**
4. **Establish Dedicated Reserves for all Major Asset Classes.**
5. **Integrate Lifecycle costing in City of Colwood decision making in the following ways:**
    a. Amend the City of Colwood's Purchasing and Disposal of Assets Policy PUR001 to more fully address lifecycle costing considerations when evaluating procurement decisions.
    b. Amend the City of Colwood'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.
    c. Require a lifecycle costing analysis to be conducted for Council to consider with rezoning applications.
6. **Align long term cash flows with investment portfolio/horizon.**

Scope of Work, Assumptions, and Limitations

Scope of Work

FIT Local Government Consulting Inc. 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 and debt servicing costs,
    - Executive summary outlining key findings and key recommendations,
    - Policy recommendations,
    - Condition assessments based on modified American Society of Civil Engineers alpha numeric system,
2. Provide a financial modelling database.
3. Preparation of 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 unconditional Federal Canada Community Building Fund (Gas Tax) payments.

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

Asset Component Unit Rates: The unit rates for sizes of linear assets can vary significantly by diameter. For some linear assets diameter size data was not available therefore modelling was prepared using unit rates per advice from City staff.

Asset Age: Precise in-service date data was not available for various types of road, storm and sewer assets. For modelling purposes, the Plan took advice from City staff based on review of historical plans and the years that developments occurred. Roads not part of recent developments had their surface paving ages assigned after factoring in their Pavement Condition Index and any recent work noted on them.

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

Existing Capital Only: This 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. Many of the City of Colwood's Master Plans do anticipate growth. Adoption of the sustainable asset management recommendations in the Plan, such as Funding Recommendation #1 and Policy Recommendations #2 and #3, 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 of Colwood should consider applying an annual forced growth 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 of Colwood's infrastructure does not meet existing standards, for example, some of the City of Colwood's sidewalks are 1.5m in width and would need to be widen to 2m to meet improved standards.

Investment Revenue: Modelling has integrated a 3% 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 1.96% for the past 5 years and 5.07% for the last year. Yields have recently swung from a historically low yield of less than 0.25% to a current yield of above 5.00%. Additionally, the City of Colwood can choose to diversify its long-term cash flows in higher yielding funds such as the MFA's bond fund. This fund has returned over 5% on average since inception, with a current 2.04% 5-year average due to interest rate increases. Also, 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. Increasing forecasted investment returns from 2% to 3% could increase modelled investment returns from approximately $120M to $560M+ over the next 100-years.

Park land Assessed Values: Park land is assessed and valued using an institutional park rate applied by BC Assessment.

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:** 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.
- **Land:** based on 2022 Assessed Valued published by BC Assessment.
- **Vehicles and Equipment:** based on most recent vehicle equipment plans prepared by City of Colwood staff.
- **Park structures:** based on most recent appraisal conducted, when available. Based on inflated historical cost when not available.

Sidewalk Age: In-service date data was available for 66% of sidewalks. The remainder were able to be ascertained from in-service date of their associated roads and documented developments.

Undedicated Reserves: The City of Colwood has not dedicated accumulated reserve balances and annual funding levels by asset class. Therefore, to estimate the City of Colwood's accumulated infrastructure funding gap and the annual funding gap, the Plan apportions funding based on a proportion of replacement cost. However, the City of Colwood may choose to dedicate or commit these funds differently.

Works of Art: The City of Colwood manages and controls various works of art and non-operational historical, and cultural assets, including buildings, artifacts, and paintings located at City of Colwood 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 at September 2023. All unit costs used to derive replacement costs include 10% Surveying and other costs, 15% Engineering and Construction Administration plus a 40% contingency. An Engineering firm was engaged to develop unit rates based on recent tender prices. Unit prices for linear assets (storm, sewer) are relatively comparable to class D unit rates used in the 2023 Sewer Master Plan update.

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. Vehicle useful lives were assigned using Colwood Fleet Policy FLEE 001.See Appendix E for full useful life estimates. Major fire apparatus replacement cycles utilize the National Fire Protection Association standards.

Sources of Information

The Plan was prepared using the following sources of information. All sources are the City of Colwood, unless otherwise noted:

- 2024-2028 Financial Plan
- Consolidated Financial Statements – Year Ended December 31, 2022
- Annual Report – Year Ended December 31, 2022
- Statement of Present-Day Replacement Cost for Insurable Values, February 2, 2023, Municipal Insurance Association of BC
- Appraisal Report of 3300 Wishart Road, January 1, 2021, Pacific Rim Appraisals Ltd.
- Bridge Inspections Report, December 19, 2008, Stantec Consulting Ltd.
- Esquimalt Lagoon Bridge: Winter 2021/2022 Structural Repairs Report, September 30, 2021, Stantec Consulting Ltd.
- Colwood Sustainable Replacement Plan (2019)
- Colwood Strategic Plan 2019-2023
- Tangible Capital Asset subledger export, December 2022
- Graphical Interface Layers for the various asset groups provided by Colwood GIS systems
- Colwood Storm Water Master Plan Technical Memo, 2019, McElhanney Consulting Services
- Official Community Plan, Bylaw 1700 Amended September 26, 2022
- Community Charter, Section 7 Municipal Purposes
- Colwood Parks & Recreation Master Plan, 2019, LANARC
- Pavement Management Analysis Report, MS Infrastructure Management Services , July 2018
- Subdivision and Development Bylaw, 1995
- Colwood 2013 Sewer Master Plan, Kerr Wood Leidel Consulting Services
- Colwood Fleet Policy FLE001 (2020)
- Colwood 2015 Transportation Master Plan
- Purchasing Power Delegation Bylaw No. 1748, 2019
- Waterfront Stewardship Plan, July 2023 – Draft
- Westshore Parks & Recreation Society 2023 Operating Budget With Converted Assessments
- Demographic Study & Land Yield Analysis, Colliers 2016
- Minutes of Regular Council meetings, Feb 25, 2019
- 2023 Condition Assessments by staff, Nov 2023.
- American Society of Civil Engineers alpha numeric system,
- Colwood Investment Policy INV001 (2009)
- Municipal Insurance Association of BC Inspection Report, July 2023
- Sewer Master Plan Update, 2022, Kerr Wood Leidel Consulting Services

Section A: Asset Management in Colwood

Purpose of the Plan – Alignment of Long-Term Funding

The Plan was primarily developed in 2019 to support sustainable service delivery of the City of Colwood's capital services. For the City of Colwood'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 related 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.

The City of Colwood has made considerable progress in its Asset Management journey, and the Plan represents a significant step forward in progress.

FIGURE 2: ASSET MANAGEMENT BC FRAMEWORK

Asset Management Policy

The City has not yet formally established and adopted an Asset Management Policy. However, the City has integrated several asset management principles into various corporate policies. The City has established a policy with respect to the fiscal sustainability of infrastructure funding. The Official Community Plan states the objective: 6.2.5 *"To optimize efficient use of existing infrastructure assets, and to minimize the need to expand sewage infrastructure."*

- Council, with direction from senior leadership, over successive terms has brought forth strategic plans for the various asset groups (see Council Direction section below).

Council Direction – Asset Management

The City of Colwood has taken great strides these past five years and is continuing to prioritize sustainable infrastructure replacement, thereby allowing the City to make informed decisions on funding and related policies for infrastructure sustainability:

- 2023-2027 Strategic Plan: Build long-term financial models to understand and fund operational and capital requirements. Review and Update the Fire Department Fleet Replacement Plan and capital plan. Review and recommend a financial model to understand the impact of new development on existing and future tax levels. Review and update the Fleet Replacement Policy and capital plan. Review and recommend a municipal capital budget process for full asset life cycle accounting. Review and recommend a process to ensure reserve fund transfers support the recapitalization of municipal infrastructure. Establish a new or updated Sewer Master Plan with a 10-year operating and capital spending plan. Establish a 10-year Pavement Condition operating and capital spending plan.
- 2019-2022 Strategic Plan: Review and recommend a financial model to understand the impact of new development on existing and future tax levels. Review and update the Fleet Replacement Policy and capital plan. Review and recommend a municipal capital budget process for full asset life cycle accounting. Review and recommend a process to ensure reserve fund transfers support the recapitalization of municipal infrastructure. Establish a new or updated Sewer Master Plan with a 10-year operating and capital spending plan. Update the Stormwater Master Plan and recommend a 10-year operating and capital spending plan. Establish a 10-year Pavement Condition operating and capital spending plan.
- Council has approved increased resourcing in multiple service areas to expand asset management:
    - Formalization of a GIS service area, with the creation of a GIS Manager
    - Restructure of staff accountants, with the creation of an infrastructure accountant to better monitor and maintain the asset infrastructure records.
    - Addition of dedicated capital works infrastructure staffing (P Eng).
- The City has assembled a select Infrastructure Committee (2023).
- Future infrastructure funding began in 2019 with a 1% lift in property taxes annually (excluding 2020) to fund the infrastructure reserve; in 2024, Council endorsed a 1.65% lift in property taxes to support an increased transfer to reserves for sustainable infrastructure.
- The City has Implemented closed-circuit television (CCTV) for underground service condition assessments.
- The City is implementing asset management software to manage asset inventory (2024).

TABLE 1: ASSET MANAGEMENT PROGRAM COMPONENTS

Sustainable Infrastructure Plan Components			
Sewer Master Plan	Parks & Recreation Master Plan	Transportation Master Plan	IT Equipment
Fleet Policy	Sustainable Infrastructure Replacement Plan	Pavement Condition Assessments	Sustainable Infrastructure Committee
Strategic Plan	Asset Management Software	Appraisals	Esquimalt Lagoon Inspections
Official Community Plan	5 Year Financial Plan	Closed Circuit TV Inspections	Pedestrian Bridge Inspections
Parks Service Level Definition	Drainage Master Plan	GIS System	LED Street Lights
Public Sector Financial Statements	Vehicles & Equipment	E3 Fleet Review	Stormwater Master Plan

Section B: Overview of Asset Inventory

Inventory Valuation

The estimated replacement costs of the City of Colwood's assets are approximately $739.6M. Approximately $601.2M of these assets are depreciable and will need to be replaced. The value of the City of Colwood's asset inventory demonstrate the significant service-providing value the infrastructure has for the Community.

TABLE 2: ASSET INVENTORY VALUATION

Asset	Quantity	Replacement Value	Useful Life
Natural Assets	Unknown	Unknown	Potentially Unlimited
Land	17.6 (ha)	$ 138,311,800	Unlimited
Park Structures	61	$4,181,000	20-80 years
Fleet & Equipment	66 units	15,010,000	10-35 years
Buildings	32,086 m^2	74,489,900	25-70 years
Road Infrastructure	870,200 m^2	195,582,400	41-125 years
Drainage	54.2 km	163,985,600	80-100 years
Sanitary Sewer	60.6 km	147,993,400	32-100years
Total		$739,554,100	
Total Depreciable Assets		$601,242,300	

Inventory Consumption

Overall, the City of Colwood is estimated to have consumed 32.8% ($197.3M) of the value of its infrastructure. This suggests that the City of Colwood's infrastructure is less than one-third through its estimated weighted useful life by value.

TABLE 3: ASSET INVENTORY CONSUMPTION

Asset	% Consumed	$ Consumed	% Overdue	$ Value Overdue
Park Structures	20.2%	$1,134,000	1.2%	$0.05M
Vehicles & Equipment	63.6%	9,543,500	12.4%	$1.86M
Buildings	44.5%	41,326,700	0.0%	$0.00M
Road Infrastructure	34.7%	67,806,800	0.8 %	$1.64M
Drainage	26.9%	44,036,500	0.0 %	$0.00M
Sanitary Sewer	22.6%	33,448,000	0.0 %	$0.00M
Total	32.8%	$197,295,500	0.6%	$3.55M

Consumption by major asset is displayed in Table 3. Road assets are estimated to be approximately 34.7% through their useful life with an estimated $1.64M in road segments overdue for replacement; the City is prioritizing this replacement through the annual Paving Program. Road, Drainage, and Sanitary Sewer infrastructure replacement will represent a significant financial expenditure to the City of Colwood for the coming decades between 2040 and 2080. Drainage and Sanitary systems consumption and future financial challenge expectation are similar to Roads.

Section C: Infrastructure Funding

Annual Funding Levels

Current annual funding levels are estimated to be $4,354,500. Most of this funding is stable and predictable. However, Casino revenue and interest revenue will fluctuate.

TABLE 4: CURRENT INFRASTRUCTURE FUNDING

Funding Source	$ Value
Annual Transfers to Reserves: Taxation	$3,116,500
Annual Transfers to Reserves: Utility Fees	131,200
Annual Transfers to Reserves Casino Revenue	326,000
Annual Transfer to Reserve: Gas Tax	765,000
Other	15,800
Annual Reserve Interest Revenue	varies
Total	$4,354,500

Summary of Asset Condition Assessments

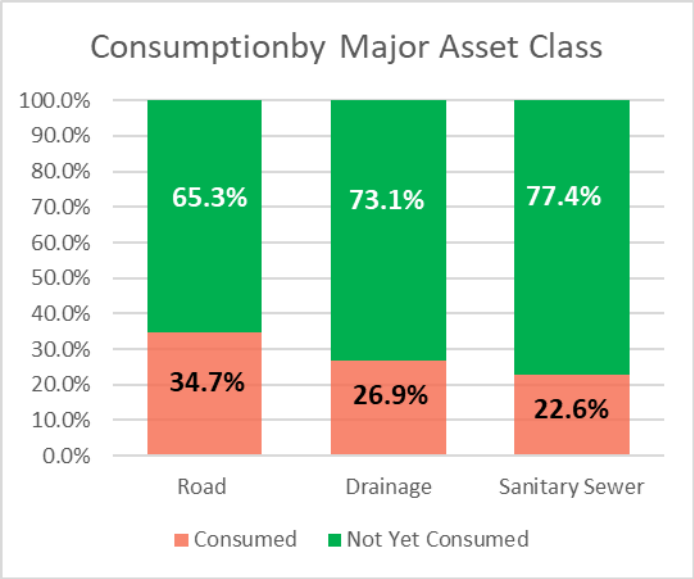


FIGURE 3: MAJOR ASSETS - PROPORTION CONSUMED

Overall, condition assessments indicate that the City of Colwood's assets are servicing the purpose for which they were constructed. The lagging indicator is funding which is currently 45% sustainable (but can be 100% sustainable within 5 years) in all categories. The City of Colwood's infrastructure appears to be meeting the capacity needs of residents, and condition of the infrastructure is good given that most assets are not yet 30% consumed (see Table 3).

TABLE 5: SUMMARY OF CONDITION ASSESSMENTS

Asset	Overall	Condition and Performance	Capacity Vs. Need	Funding Vs. Need
Park Structures	C+	B-	B	D
Vehicles	A	B+	A	A
Buildings	C	C	C-	D
Road Infrastructure	C+	C+	B-	D
Drainage	C+	B-	B	D
Sanitary Sewer	B-	B-	B+	D

Summary of Reserves (Accumulated Funding)

TABLE 6: CURRENT RESERVE BALANCES

Reserve	$ 2023 Ending
Fleet & Equipment	3,252,700
Police Building	806,500
St. John's Heritage Church	114,700
Sustainable Infrastructure	4,236,200
Sustainable Infrastructure – Sewer	119,000
Recreation	473,200
Sewer Fleet Equipment & Reserve	298,000
Gas Tax	1,124,400
Total	$10,424,700

Sustainable Annual Funding vs Actual

Sustainable annual funding levels are estimated to be $9,711,100. This value is determined by the individual asset replacement costs divided by their estimated useful lives. Current funding is estimated to be $4,354,500 which is therefore 44.8% sustainable.

Some of the funding sources identified in Table 6 (Current Reserve Balances) are dedicated to specific asset classes. Approximately 69% of the funding sources are undedicated meaning they can be used to fund the replacement of any asset class. In Table 7 below, the undedicated sources have been hypothetically allocated on the basis of proportion of funding gap by asset class. However, the City may allocate, or utilize undedicated funding sources as it sees fit.

TABLE 7: ANNUAL FUNDING GAP

Asset	Sustainable Annual Funding	Actual Annual Funding	Difference (Annual Funding Gap)
Park Structures	$179,500	$63,600	$115,900
Vehicles & Equipment	868,700	950,400	-81,700
Buildings	1,007,700	576,700	431,000
Road Infrastructure	3,868,800	1,371,700	2,497,100
Drainage	1,909,600	677,000	1,232,600
Sanitary Sewer	1,876,800	715,100	1,161,700
Total	$9,711,100	$4,354,500	$5,356,600

The annual funding gap is forecasted to be approximately $5.3M. This is equivalent to a 24.1% tax increase ($5,356,600M/22,186,700[1]). However, a series of early tax or utility fee increases can result in a significant portion of this funding gap being funded by investment returns. See funding recommendations of Section E for further information.

[1]: City of Colwood Financial Plan 2024 – 2028, 2024 budgeted Property Taxes

Section D: Modeling

Infrastructure Replacement Forecast 2024-2123

The City of Colwood is forecasted to spend approximately $876.2 (2024 dollars) over the next 100 years (2024-2123) on infrastructure replacement. This figure is dependent on selected capital services levels and does not include new infrastructure acquired through that period.

Approximately 59% ($514.8M) of that spending is expected to occur between 2049 – 2093 (45 years). The City of Colwood will need to prepare for this coming financial burden. It is estimated that $4.6M (0.6%) of the City's depreciable assets are overdue for replacement, highlighted in red below.

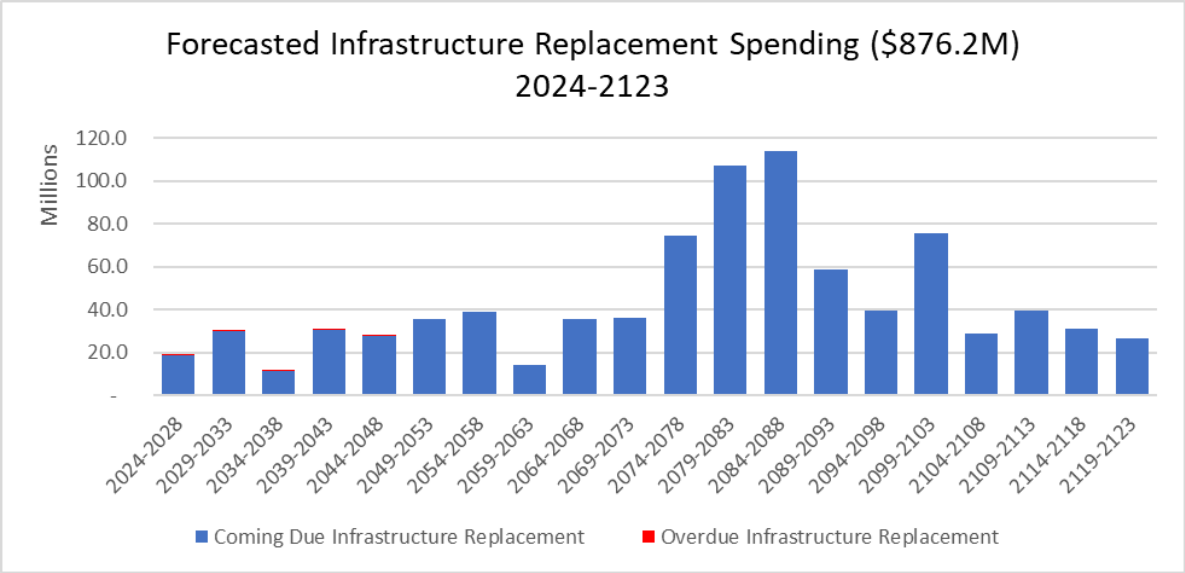
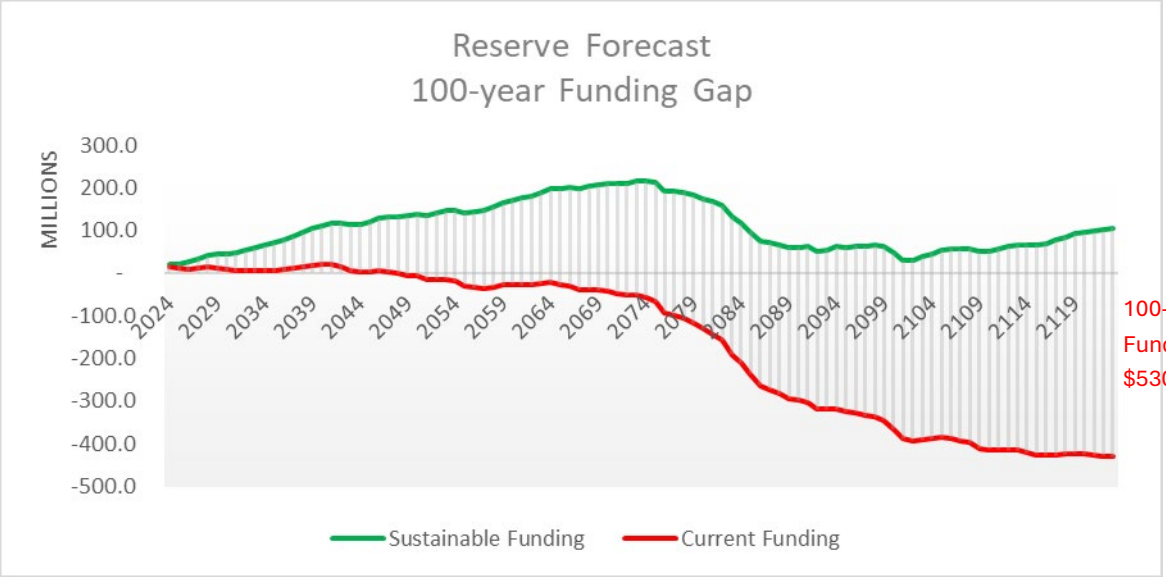


FIGURE 3: FORECASTED INFRASTRUCTURE REPLACEMENT SPENDING 2024-2123

Reserves & Debt Forecast 2024-2123

The annual sustainable funding required to replace the City of Colwood's infrastructure is $9.7M. Current funding is approximately $4.4M (not including investment income), leaving an annual funding gap of approximately $5.3M. Left unchanged, this annual funding gap may lead to a 100-year funding gap totaling,

approximately, $530M. Much of this funding gap can be resolved by early tax and utility increases producing sustained investment returns.



The City will need to either fund this gap or reduce capital services. However, the City cannot reduce capital services below regulatory levels of service. Thus, it is unlikely that the forecasted 100-year funding gap can be eliminated by reducing capital services alone.

The City can also delay property tax and utility rate increases until replacement costs are incurred; this is in contrast to gradual reserve contribution over the life of the assets, as recommended by the Plan. The City will not have adequate reserve balances if the City delays property tax and utility rate increases until replacement costs are incurred and will therefore need to incur debt. The opportunity costs of investment returns not earned are significant as sustainable funding is forecasted to generate $230M in investment earnings over the next 100 years.

Impact of Inflation

The impact of inflation is not integrated into the Plan. There are several reasons for this. First, it is difficult to communicate the financial implications of now using future value dollars. For example, modelling has forecasted $876.2M in spending in 2024 dollars between 2024 and 2123. When a 3% inflationary assumption is applied to this value, the modelling indicates $5.7 billion in spending. It is challenging to conceptualize future spending in future dollars due to the time value of money.

Secondly, the main objective of the financial analysis is to determine how sustainable current funding is compared to the annualized cost of infrastructure replacement. This can be accomplished without using inflationary assumptions. If spending forecasts were adjusted to include inflation, the forecasts would then need to be discounted back to present value to compensate for the time value of money. This exercise would have an equal and opposite effect of adjusting for inflation unless the discount rate used was

different than the inflationary assumption. An inflationary assumption may differ from the chosen discount rate. However, it is no unreasonable to assume that infrastructure replacement inflation will exceed the Bank of Canada inflation target range. It is also fair to assume that the City's discount rate would exceed this target range as the City's indicative lending rate.

So how does the City mitigate the impact of inflation?

There are two recommendation in the Plan that will significantly mitigate the impact of inflation if implemented:

1. Investment Recommendation One – Align long-term cash flows with long-term investment portfolio horizon
2. Forced Growth Recommendation One – Increase sustainable infrastructure funding annually in the budget by an appropriate forced growth factor

These policy recommendations and their impact are discussed in more detail in Section E.

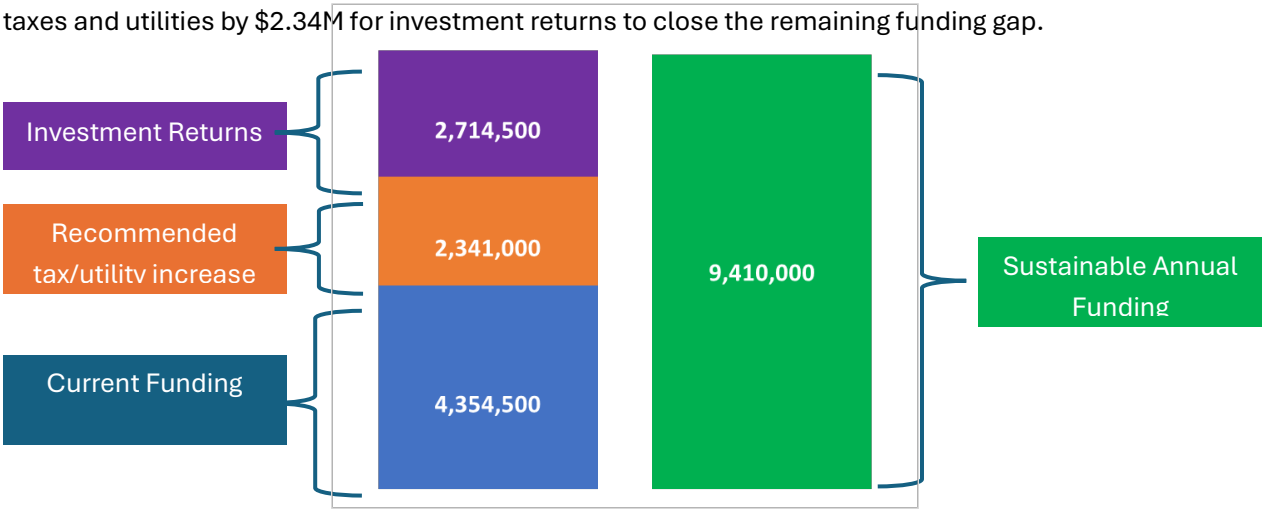
Section E: Options & Recommendations

Funding Options & Recommendations

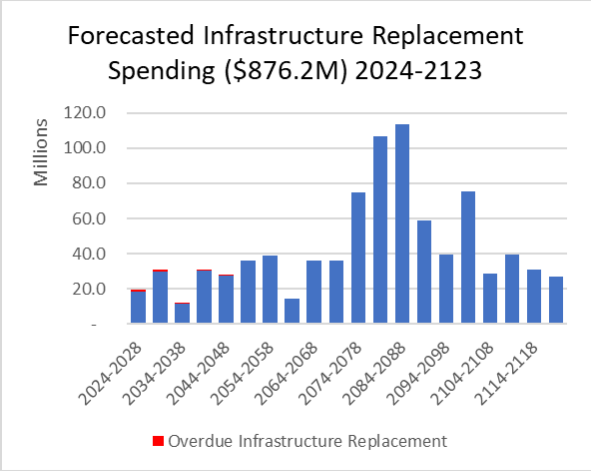
Funding Recommendation One - Achieve Sustainable Funding Levels

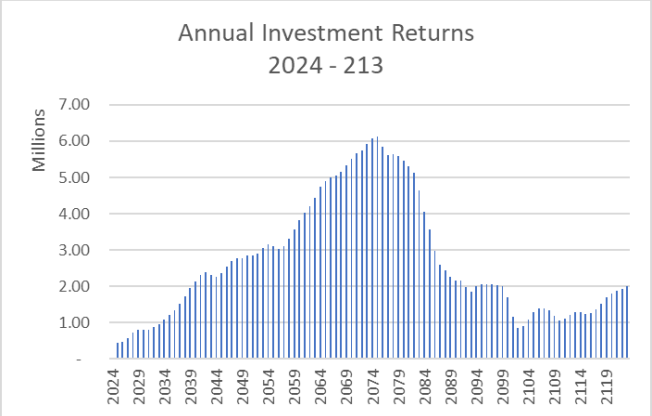
The City's annual funding gap is estimated to be $5.3M. Accordingly, the City's forecasted 100-year funding gap is estimated to be $530M. This means that if the City were to freeze funding levels at 2024 levels, infrastructure replacement costs would exceed available funding by $530M.

The City has a unique opportunity to close the annual funding gap not only through utility and tax increase but by leveraging investment returns. The City's assets are relatively young (approximately 32.8% through their useful lives on average). This means that proactive reserve funding can leverage significant cumulative investment returns. In fact, modelling indicates that the City will need to increase taxes and utilities by $2.34M for investment returns to close the remaining funding gap.



The $2.7M in investment returns depicted above represent the average annual investment return earned in infrastructure replacement reserves over the next 100 years. The annual investment return will fluctuate with reserve balance and yield. Given that the City's infrastructure is relatively new, major infrastructure replacement is concentrated after 2074. Notice in the forecasts below that annual investment returns peak prior to 2074.





Given the City's ability to earn investment returns on infrastructure reserves, the annual tax and utility funding target is $6,695,500. To achieve this annual target there are several options that the City may consider,

Sewer Infrastructure Funding

1. Fund Sewer Infrastructure replacement 100% through sewer user fees and remaining capital through taxation.

   This option eliminates the need for property tax to fund the replacement of sewer infrastructure. As a result, the property tax increase required for the remaining infrastructure would be approximately 5.50%[1].

2. Fund Sewer Infrastructure replacement 50% through sewer user fees and remaining capital through taxation.

   This option would result in the need for a greater property tax increase than in option 1 – 7.29% as compared to 5.50% in Option 1.

Option		Sewer Fee Increase Needed	Property Tax Increase Needed
1	100% Sewer Utility Fee Funded	36.75%	5.50%
2	50% Sewer Utility Fee Funded	18.38%	7.29%

Depending on the option selected above, the City may choose from many rate increase phasing options:

100% Sewer Utility Fee Funded Sewer Infrastructure Replacement		50% Sewer Utility Fee Funded Sewer Infrastructure Replacement
# Years to Implement	Sewer User Fee Increase	Sewer User Fee Increase

[1] not including increases for the Public Works Operating Facility and RCMP Detachment.

1	36.75%	18.38%
3	12.25% annually (for 3 years)	6.13% annually (for 3 years)
7	5.25% annually (for 7 years)	2.63% annually (for 7 years)
# Years to Implement	Property Tax Increase	Property Tax Increase
1	5.50%	7.29%
3	1.83% annually (for 3 years)	2.43% annually (for 3 years)
5	1.10% annually (for 5 years)	1.46% annually (for 5 years)

Borrowing for the RCMP Detachment and Public Works Operations Facility at current indicative 10-years would have the following financial impact:

Facility	Tax Increase for Debt Principal	Tax Increase for Debt Interest	Total tax increase required
Public Works Operating Facility	0.78%	1.95%	2.73%
RCMP Detachment	1.76%	4.41%	6.17%

The City is currently undertaking the process to achieve electoral approval for the Public Works Operating Facility. Furthermore, the City of Langford has requested that the Capital Regional District (CRD) establish a subregional service to fund the capital costs of building the new RCMP detachment. If established, the subregional service would requisition the debt servicing costs which would be recovered by a separate CRD property tax levy. As a result, the Plan recommends that the City consider tax increases for these two facilities separately from tax and utility rate increases for remaining assets.

Funding Recommendation Two - Establish Dedicated Funding Streams for Major Asset Classes

Establishing dedicated reserve transfers and/or reserve funds for individual asset classes will allow the City of Colwood to manage risk and take part in capital service level decisions. For instance, Council can establish sustainable funding sources for asset classes that are in replacement soner than other asset classes.

Asset	Recommended Apportionment	Rationale
Park Structures	0%	Comparatively minor 100-Year funding forecast
Vehicles & Equipment	0%	Already established dedicated funding
Buildings	0%	See rationale in paragraph below
Road Infrastructure	75%	Approximately 100-year funding forecast proportion
Drainage	25%	Approximately 100-year funding forecast proportion
Sanitary Sewer	0%	Already established dedicated funding

The spending projections outlined in the Plan exclude any provisions for expanding or creating new community facilities. When constructing new buildings, there are substantial differences in quality, functionality, energy efficiency, and accessibility. Decisions related to these aspects typically involve extensive community consultation and careful consideration by the Council. Consequently, debt financing becomes a suitable choice, especially since it often requires approval from the electorate.

Additionally, when debt is spread over a maximum thirty-year amortization period, it enables the City to establish a sustainable funding source beyond that period without necessitating tax increases.

Asset	Recommended Apportionment
Road Infrastructure	75%
Drainage	25%
Total	100%

Funding Recommendation Three - Establish Dedicated Reserves for all Major Asset Classes

Dedicated replacement reserves can help to ensure the City utilizes funding for existing infrastructure rather than new infrastructure. The City has many existing replacement reserves. Some examples include the various equipment replacement reserves and the Police Building reserve.

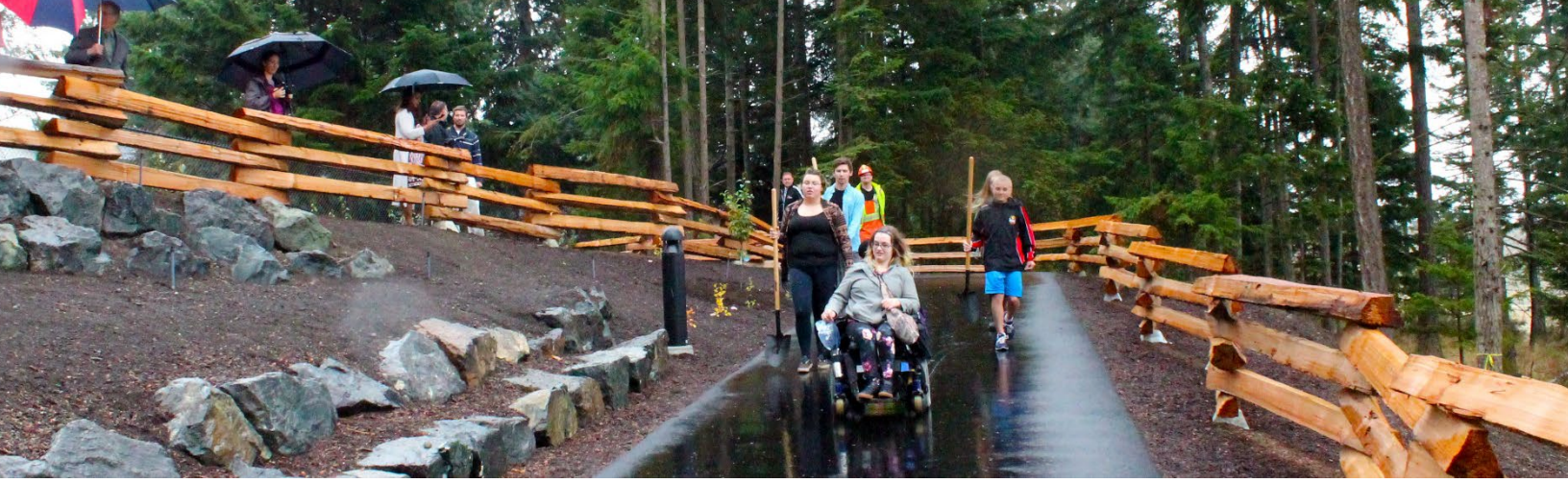
Currently there are no dedicated replacement reserves for the road and storm asset classes. These asset classes are forecasted to be the most significant infrastructure replacement costs over the next 100-years.

Recommended reorganization of the existing reserves is outlined in the table below:

Asset Class	Existing Reserve	Recommended Reserve
Vehicles & Equipment	Equipment Replacement General Fleet & Equipment Replacement Fire Fleet & Equipment Replacement Sewer Fleet & Equipment	Equipment Replacement General Fleet & Equipment Replacement Fire Fleet & Equipment Replacement Sewer Fleet & Equipment
Buildings	City Hall Facility Police Building Recreation, Westshore Parks and Rec Facilities St. John's Heritage Church & Emery Hall	Sustainable Replacement - Facilities
Road Infrastructure	None	Sustainable Replacement – Roads & Transportation
Drainage	None	Sustainable Replacement – Stormwater
Sanitary Sewer	Sustainable Infrastructure - Sewer	Sustainable Replacement - Sewer
Unallocated	Sustainable Infrastructure - General	None

Reserve Structure

The City has established an "Infrastructure Deficit" reserve – also referred to as the "Sustainable Infrastructure" reserve. This reserve has been established and funded by the annual Financial Plan bylaw. This reserve is not established by Bylaw and as a result no formal parameters have been imposed for the use of the funds. The expected infrastructure replacement needs of a community can shift.



Policy Recommendations

An Asset Management (AM) Policy is an important tool to support the City of Colwood's vision for sustainable service delivery. While the City of Colwood has not developed a comprehensive AM Policy, asset management practices can still be integrated into various other policies and operations.

Life-cycle Costing Policy Recommendations

Council should be provided with full life-cycle information when making decisions related to the City's infrastructure.

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 8: 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 9: 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 of Colwood's Bylaw No. 1748 (Purchasing Policy PUR001) be amended to encourage staff to consider lifecycle costs when scoring procurement processes.

Policy Recommendation Two – Integrate Lifecycle Costing into Budget Deliberations

TABLE 10: OPERATING VS CAPITAL BUDGET

At first glance, the City of Colwood's budget seems concerned with only a small proportion of capital. However, the City of Colwood's 2023-2027 Financial Plan includes provisions for $25.3M in operating expenses and $20.2M in Capital Expenditures and Debt Principles.

2022 Budget	Amount	Proportion
Operating Expenses	$16,221,674	79.4%
Capital Expenses & Debt Principal	4,203,755	20.6%
Total	$20,425,429	100.0%

Considering what drives operating expenses in the budget, it is clear that most costs arise from capital services. Most operating costs are incurred to operate or maintain capital.

2023 Budget	Amount	Proportion
Operating Expenses	$16,221,674	79.4%
Capital Expenses & Debt Principal	4,203,755	20.6%
Total	$20,425,429	100.0%

TABLE 11: BUDGET DEVOTED TO PROVIDING CAPITAL SERVICES

Expense	Amount
Operating expenses devoted to operating or maintaining capital	$9.9M
Capital & principal payments	4.2M
Total budget to provide capital services	14.1M
Total 2022 budgeted expenses	20.4M
Proportion of total budget	**69.1%**

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.

Policy Recommendation Three – Integrate Lifecycle Costing Land-Use Decisions

As the City of Colwood grows and develops, new infrastructure is constructed to provide critical services to citizens. A municipality's Zoning and Subdivision/Development Servicing Bylaws strongly influence the amount of infrastructure constructed when development occurs. The Zoning Bylaw regulates density and use while the Subdivision/Development Servicing Bylaw regulates off-site services.

Asset Management BC recommends that an assessment of lifecycle costs be conducted when land-use decisions are proposed[2]. This is important for several reasons:

1. **A municipality's tax rate may be unsustainable, and new development will compound financial pressures**. New properties will be subject to established tax rates. The City of Colwood's current tax rates are not sustainable as they do not fund the full lifecycle costs of City of Colwood infrastructure. New development will, therefore, compound growth in the Cumulative Infrastructure Funding Gap.
2. **Most of an asset's costs are incurred as operating and maintenance costs throughout its lifecycle**. Initial construction costs of development infrastructure are paid for by developers and given to the municipality as contributed capital. However, the municipality will incur operating, maintenance, and replacement costs going forward.
3. **New taxes from new development initially exceed costs, but this is deceiving.** Often the municipality will benefit from increased tax revenues when a property is initially subdivided. Even more revenue is earned when a property is developed and new buildings constructed. However, the capital maintenance, operating maintenance, and replacement costs all lag. Therefore, when a municipality uses new development taxation (aka new construction) revenue to reduce the tax burden for current taxpayers, the true cost of development is not integrated into the tax rate.

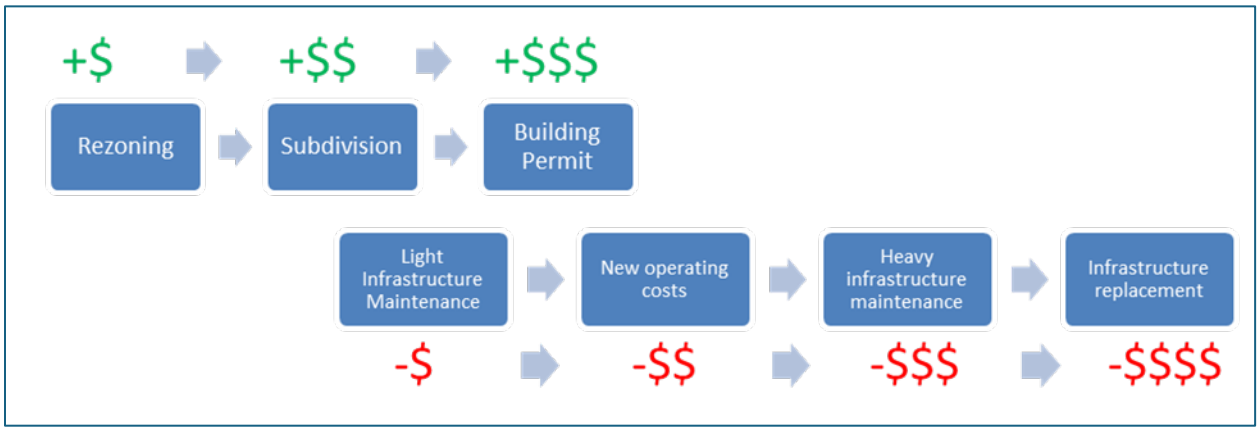


FIGURE 4: LIFECYCLE COSTS OF NEW DEVELOPMENT

The following policies are recommended in respect of land use and asset management:

[2] Land Use Planning and Asset Management, A Sustainable Service Delivery Primer, 2019

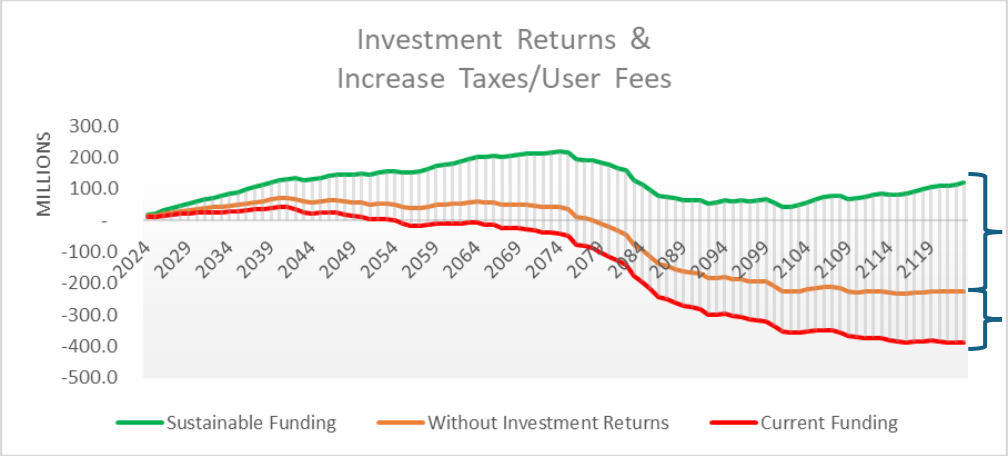
- **Policy Recommendation 3a:** Require lifecycle costing analysis to be conducted when rezoning applications are prepared.
- **Policy Recommendation 3b**: Utilize Non-Market Change revenue to increase transfers to reserves for capital replacements.

Investment Policy Recommendations

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

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

To demonstrate this, consider that forecasted 100-year spending on infrastructure replacement for the City is 817M. Current funding would raise $424M (annual funding of $4,236,800 x 100). Therefore 100-year revenue would fall short of required funding by $393M ($817M – $424M). Thus the City will need to raise taxes or fees sharply when costs are incurred and/or issue debt. This will eliminate the City's opportunity to raise $230M of the required funding through investment returns.



The City is in a unique position to reduce its citizens' property tax and utility user fee increases over the next 100 years. The City's infrastructure is relatively new (31.1% consumed). This gives the City the opportunity to save well in advance of its infrastructure's replacement. Many municipalities are facing significant financial challenges due to limited reserve balances when infrastructure comes due for replacement.

Modelling assumed a 3% investment return over the 100-year time horizon. However, the Municipal Finance Authority offers many investment products with historical yields that exceed this assumption. The MFA has recently introduced a new Diversified Multi-Asset Class Fund, which is exposed to market equities and has a performance expectation of +2 to +3% inflation. Modelling higher investment returns produced form sustainable funding levels are as follows:

Investment Return Assumption	$ Investment Returns
3% (current assumption)	$237M
4%	$1,187M

5%	$3,746M

Forced Growth Policy Recommendations

Forced Growth Recommendation One – Increase sustainable infrastructure funding annually in the budget by an appropriate forced growth factor

Annual sustainable infrastructure replacement funding recommendations are based on 2024 dollars. Construction costs will rise with inflation much like any other cost input for City services. The City should increase its annual infrastructure funding by an amount equal to construction cost increase.

The annual sustainable infrastructure replacement property tax and utility fee funding target is 6.7M. The City's 2024 property tax budget is $21.3M. Therefore a 3% capital cost construction increase would impose a 0.94% tax increase ($6.7M x 3% / 21.3M).

This measure would ensure that an annual, cumulative, and 100-year funding gap does not grow as inflation impacts capital cost construction.

Section F: Detailed Inventory of Infrastructure

Nature Assets

There is currently no universally accepted definition of a Natural Asset. However, Asset Management BC recommends the following definition:

> ***"Municipal natural assets refer to the stock of natural resources or ecosystems that is relied upon, managed, or could be managed by a municipality, regional district, or other form of City of Colwood for the sustainable provision of one or more municipal services."***

The City of Colwood prepares its Financial Statements according to the accounting standards set out in the Public Sector Accounting (PSA) Handbook. These standards outline financial disclosures and accounting related to Tangible Capital Assets. Tangible Capital Assets must either be constructed or purchased to be recorded in the City of Colwood's financial statements. Unfortunately, this precludes the accounting for many natural assets.

Natural Assets should occupy an important place in a municipality's long-term financial planning process. Not only do these assets provide a valuable service to the community, one that citizens enjoy and depend on, but they often offset the cost of constructing and maintaining grey infrastructure. For example, creeks and rivers provide valuable drainage services, while foreshore and trees provide recreational value. The 2021 Parks and Recreation Master Plan, in tandem with the Official Community Plan, natural assets' protection and future growth are entrenched and necessary for the quality of life in Colwood for year to come.

Since Natural Assets are neither acquired or constructed, there is no consistent way to value such assets. An organization may choose to value its Natural Assets in a multitude of ways:

TABLE 12: NATURAL ASSET VALUATION METHODS

Natural Asset	Potential Valuation Model
Trees (Urban Forest)	1. Value of reduced healthcare costs that result from cleaner air. 2. Value of carbon offsets that do not need to be purchased.

	3. Cost to purchase, plant, maintain, and water a tree until maturity.
Creeks, Rivers	1. Cost of comparable recreational value provided by built infrastructure. 2. Lifecycle of grey infrastructure that doesn't have to be built due to drainage services provided by creeks and rivers.
Foreshore	1. Cost of comparable recreational value provided by built infrastructure.

Land and Park Inventory

The City of Colwood owns approximately 154.4 hectares of land, valued at over $138.3M. In addition, there are other parks within the City of Colwood's borders that are owned and maintained by other levels of government. These have not been included in the inventory below.

TABLE 13: LAND VALUE SUMMARY

Land Classification	Area (Hectares)	Assessed Value ($millions)
Land under Buildings	55.8	$10.7
Park land	89.24	134.03
Total	144.6	$144.73

TABLE 14: PARK LAND LISTING

Park Land[2]	Park Classification[1]	Area (ha)[3]	Assessed Value ($millions)
Colwood Creek Park	Community Park	11.96	$8.98
Community Park	Community Park	.82	1.91
Herm Williams	Community Park	.85	2.73
Lookout Lake Park	Community Park	2.27	1.79
Meadow Park Green	Community Park	1.02	3.16
Meadow Park North	Community Park	2.91	3.54
Murray's Park Connector	Community Park	0.51	6.67
Ocean View Park	Community Park	2.67	3.00
Pelican Park	CRD Water Station	1.72	0.31
Bezanton Park	Green Space	0.21	0.54
Claudette Park	Green Space	0.05	0.42
Drummond Park	Green Space	0.29	1.05
Elizabeth Anne Park	Green Space	0.07	1.02
Girou Park	Green Space	0.19	0.59
Gratton Park	Green Space	0.02	0.78
Glencairn Park	Green Space	0.10	2.41
Karger Park	Green Space	0.11	-
Madronna Bank Park	Green Space	0.31	0.75
North Ridge Park	Green Space	2.89	0.76
Passage Park	Green Space	0.12	-
Pioneer Cemetery	Green Space	0.26	0.98
St. John's Church	Green Space	0.22	10.87
Sue Mar Park	Green Space	0.23	17.13
Undeveloped Park	Green Space	0.20	2.92
Undeveloped Park	Green Space	0.10	16.51

Undeveloped Park	Green Space	0.06	4.67
Undeveloped Park	Green Space	0.12	6.52
Undeveloped Park	Green Space	0.13	4.32
Undeveloped Park	Green Space	0.03	2.62
Afriston Park	Linear Park	0.10	0.58
Granrose Park	Linear Park	0.27	0.52
Latoria Walk Park	Linear Park	0.56	1.25
Perimeter Park	Linear Park	0.82	0.69
Regency Park	Linear Park	0.21	1.53
Undeveloped Park	Natural Space	0.16	0.57
Hartwig-Saunders	Nature Park	0.26	0.72
Havenwood Park	Nature Park	17.10	0.75
Lagoon West Park	Nature Park	17.97	0.49
Millstream Creek	Nature Park	0.91	-
Murray's Pond Park	Nature Park	7.15	0.48
North Ridge Forest Park	Nature Park	3.48	0.63
Outlook Park	Nature Park	2.96	0.67
Brittany Park	Neighbourhood Park	2.33	1.19
Coleman Park	Neighbourhood Park	0.44	2.08
Evans Park	Neighbourhood Park	0.09	-
Peace Park	Neighbourhood Park	0.09	1.19
Promenade Park	Neighbourhood Park	1.40	0.41
Seashell Park	Neighbourhood Park	0.09	0.33
Sedgwick Park	Neighbourhood Park	0.09	0.37
Terrahue Park	Neighbourhood Park	0.09	0.35
Wickheim Park	Neighbourhood Park	0.21	-
Linear Park	Park	0.20	0.58
Undeveloped Park	Park	0.06	0.83
Undeveloped Park	Park	0.17	1.69
Undeveloped Park	Riparian	1.32	9.21
Total		89.24	$134.03

1: See Glossary for definition.

2: Park names from Parks and Trails Master Plan Map B.

3: Hectare information derived from GIS parcels and Tempest Land information.

TABLE 15: LAND UNDER BUILDING LISTING & OTHER LAND

Land Under Building	Area (ha)	Assessed Value ($millions)
Town Hall	5.1	$6.6M
Fire Hall	1.0	2.8M
Recreation	n/a	13.1M[1]
Library	0.18	7.9M[1]
Police Station	n/a	2.9M[1]
Total	6.1	$33.3M

1: Based on proportionate share of property; see Scope of Work and Limitations section

Rivers, Creeks, Streams

Approximately 18km of creeks and streams run through the City of Colwood's borders. These streams provide drainage services and help to cultivate the natural ecosystems within. The lifecycle costs that the City of Colwood's avoids by properly caring for these creeks and streams is estimated to exceed $543,000 annually.

TABLE 16: LIFECYCLE COSTING VALUATION OF RIVERS, CREEKS, AND STREAMS

Creek	Length (Km)	Capital Cost of Grey Infrastructure Alterative[1]	Annual Operating Cost of Grey Infrastructure Alternative[2]	Annual Life-Cycle Costs of Grey Infrastructure Alternative[3]
Bee Creek	0.6	$773,400	$3,867	$13,535
Hatley Creek	0.5	644,500	3,223	11,279
Selleck Creek	0.7	902,300	4,512	15,791
Joe's Creek	0.8	1,031,200	5,156	18,046
Colwood Creek	2.1	2,706,900	13,535	47,371
Millstream Creek	2.1	2,706,900	13,535	47,371
Latoria Creek	1.6	2,062,400	10,312	36,092
Total	8.4	$10,827,600	$54,140	$189,485

1: Estimated cost per kilometer $1.3M

2: Estimated cost per kilometer $6,445

3: Assumed 80-year useful life for Grey Infrastructure alternative

Trees

The City of Colwood maintains approximately 7,600 trees on its boulevards as identified and categorized by the 2018 geospatial survey of boulevard trees and ditches.

In 2018, the City conducted a geospatial survey of boulevard trees and ditches to complement its natural asset goals in the Official Community Plan and stormwater master plan. The survey found that the City maintains an inventory of over 7,500 boulevard trees. Since that time there have been 85 additional trees purchased.

Boulevard trees provide many inherent benefits that are difficult to quantify the value of:

- Improved mental & physical health and sense of place
- Energy savings
- Reduced flooding
- Improved water quality
- Climate change mitigation

Boulevard Trees Inventory

TABLE 17: BOULEVARD TREES INVENTORY

Tree Height	Count (approx.)	% of all trees
25 feet	4,000	53%
26-50 feet	2,000	26%
51-75 feet	800	10%
76-100 feet	500	7%
>100 feet	350	4%
Total	7,650	100%

TABLE 18: TREES INVENTORY (NON-BOULEVARD TREES)

Tree Species	Count
Red Maple	304
Dogwood	95
Garry Oak	52
Magnolia	48
Douglas Fir	47
Big Leaf Maple	46
Ornamental Plum	44
Spruce	36
Norway Maple	35
Katsura	32
Liquidambar	31
Pin Oak	31
Western Red Cedar	27
Ornamental Cherry	24
Fir	22
Pine	20
Unknown	67
Other	261
Total	1,222

Foreshore

The City of Colwood has approximately 14.4km of foreshore, much of which is publicly accessible. The public enjoys a significant recreational benefit from frequent use of the waterfront.

Park Structures

Park Structures Inventory

TABLE 21: PARK STRUCTURE INVENTORY OVERVIEW

Structure	Service Life	Quantity	Current Replacement Cost	Annualized Cost	% Consumed
Benches	25 years	76	$114,000	$ 5,000	Unknown
Parking Lots	25-80 years	8000 m^2+	1,800,000	23,000	28%
Play Structures	25 years	20	788,500	31,500	27%

Tables	20 years	18	36,000	2,000	Unknown
Total			$2,738,500	$61,500	28%

Park Structures Condition Assessment

TABLE 22: PARK STRUCTURE CONDITION ASSESSMENT

Asset	Overall	Condition and Performance	Capacity Vs. Need	Funding Vs. Need
Benches	B-	B+	B+	D
Parking Lots	C-	C+	C+	D
Play Structures	D+	C-	C-	D
Sports Courts	B	B	B+	D
Overall by Column	C+	B-	B	D

Park Structures Spending Forecast

TABLE 23: PARKS FUNDING SNAPSHOT

Forecasted Spending, Park Structures 2024-2123	$15.9M
Sustainable Annual Funding	$179,500
Current Annual Funding	$63,600
Annual Funding Gap	$115,900
100-year Funding Gap	$11.6M

Spending on park structure replacement and capital maintenance for the next 100 years is expected to be $15.9M (2024 dollars). The estimated annual sustainable infrastructure reserve contribution for park structures is approximately $179,516.

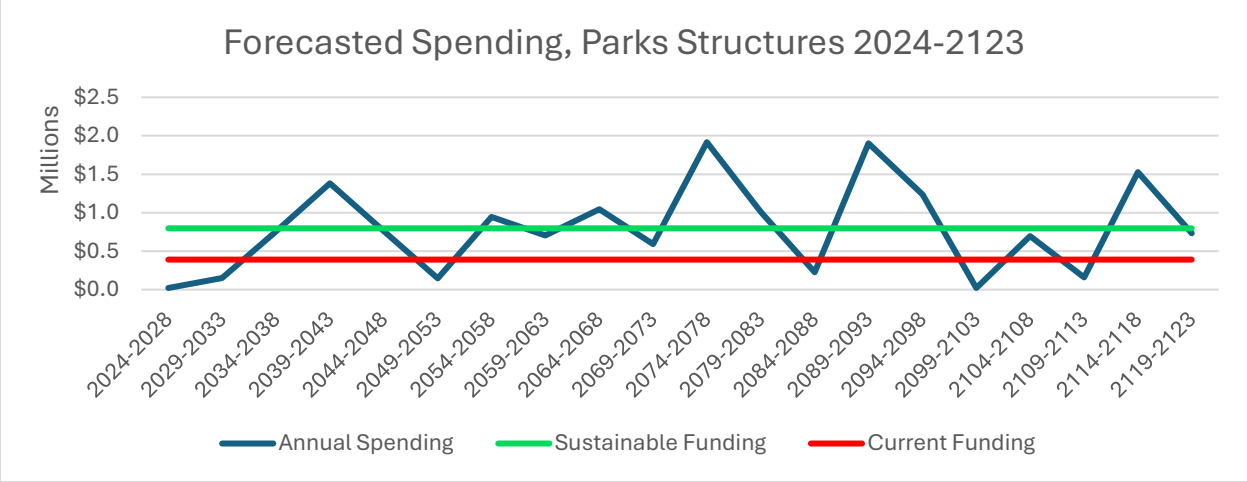


FIGURE 5: PARK STRUCTURE REPLACEMENT SPENDING 2024-2123

Vehicles

Over 50 vehicles and major equipment are considered in this replacement plan. These units service the Parks Department, General Administrative staff, and Protective Services division. The replacement value of the fleet is estimated to exceed $15.0M. The vehicles and equipment are approximately 63.6% through their lifecycle on average.

On October 26, 2020, the City adopted the Fleet Management Policy FLEE 001. This policy outlined procedures for the acquisition and disposal of City vehicles in a way that maximizes the economic benefit of life-cycle costing and minimizes the environmental impact of fleet activity.

Vehicles Inventory

TABLE 24: VEHICLE & EQUIPMENT INVENTORY OVERVIEW

Structure	Service Life	Quantity	Current Replacement Cost	Annualized Cost	% Consumed
General Administrative	14 to 17 years	56	$5,995,000	$440,400	67.9%
Fire Department	15 years	10	9,015,000	428,400	60.7%
Total		66	$15,010,000	$868,800	63.6%

Vehicles Condition Assessment

TABLE 25: VEHICLE CONDITION ASSESSMENT

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

Vehicles Spending Forecast

TABLE 26: VEHICLE FUNDING SNAPSHOT

Forecasted Spending, Vehicle Replacement 2024-2123	$88.0M
Sustainable Annual Funding	$868,800
Current Annual Funding	$868,800
Annual Funding Gap	$0
100-year Funding Gap	$0

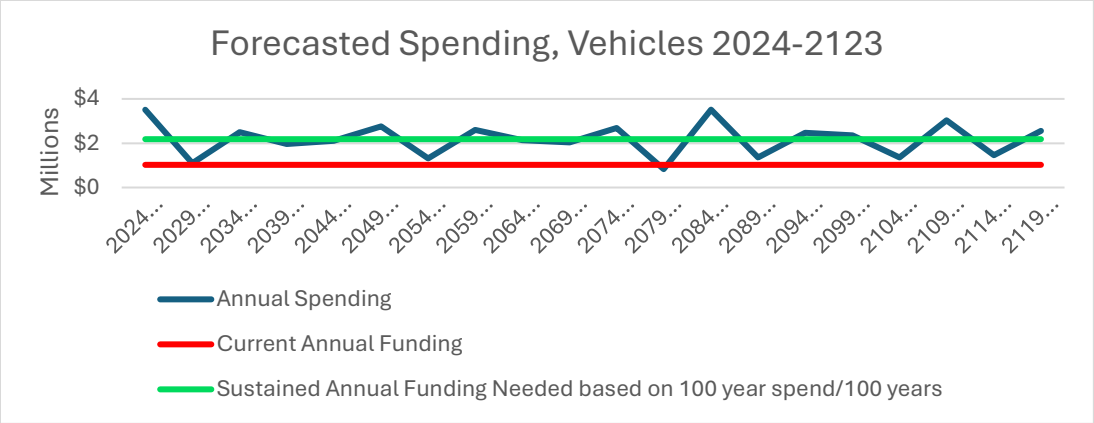


FIGURE 5: VEHICLE REPLACEMENT SPENDING 2024-2123

Buildings

The City of Colwood maintains a small portfolio of Buildings to house its Municipal Operations. The list below includes buildings not exclusively owned by the City of Colwood, such as the Westshore Parks and Recreation facilities, the West Shore RCMP building, and the Greater Victoria Public Library. The City of Colwood has a stake in each of these buildings directly or indirectly. The Plan assumes that the City of Colwood 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 26: BUILDING INVENTORY OVERVIEW

Structure	Service Life	Quantity	Current Replacement Cost	Annualized Cost	% Consumed
Municipal Hall	80 years	1,250 m^2	$8,080,000	101,000	39%
Public Works Buildings	25 years	973 m^2	8,857,500[1]	110,700	67%
Recreation	80 years	17,638 m^2	13,050,400[2]	186,400	56%
Police Detachment	80 years	8,550 m^2	20,031,400[3]	286,200	91%
Fire Hall and Shed	80 years	1,470 m^2	13,690,000	171,100	23%
Fire Museum	80 years	150 m^2	968,000	12,100	36%
Public Library	80 years	1,765 m^2	7,952,600	113,600	56%
Church & Church Hall	80 years	290 m^2	1,860,000	26,600	84%
Total			$74,489,900	1,007,700	52%

1. Replacement cost per April 22, 2024 Regular Meeting of Council
2. City of Colwood Total replacement costs of all facilities exceed $74.7M.
3. City of Colwood's proportionate share of the building assets at Police Detachment. Total replacement costs of all facilities are estimated to be over $82.4M. Replacement cost per January 9, 2024 Regular Meeting of Council.

Unit rates used to determine building replacement costs above are as follows:

Building	Per square meter
Municipal Hall	$6,458/m^2
Public Works Buildings	$9,103/m^2
Recreation	Based on appraised values
Police Detachment	$9,597/m^2
Fire Hall and Shed	$9,310/m^2
Fire Museum	$6,458/m^2
Public Library	Based on appraised values
Church & Church Hall	$6,458/m^2

Buildings Condition Assessment

TABLE 27: BUILDING CONDITION ASSESSMENT

Asset	2023 Overall	2023 Condition and Performance	2023 Capacity vs. Need	2023 Funding vs. Need	2019 Overall	2019 Condition and Performance	2019 Capacity vs. Need	2019 Funding vs. Need
Municipal Hall	C+	B	B-	D	B-	B	B+	D
Fire Hall	D+	C-	C-	D	C+	B-	B	D
Other Buildings	D	D	D	D	B-	B	B	D
Recreation	C-	C+	C-	D	C-	C+	C+	F
Police Detachment	D	D	D	D	B-	B	B-	D
Public Library	B-	B+	B	D				
Parks Building	B	B+	B+	D				
Overall	C	C	C	D	C	B-	B-	D

Buildings Spending Forecast

TABLE 28: BUILDING FUNDING SNAPSHOT

Forecasted Spending, Buildings 2023-2122	$107.1M
Sustainable Annual Funding	$1,007,700
Current Annual Funding	$576,700
Annual Funding Gap	$431,000
100-year Funding Gap	$43.1M

Spending on building replacement and capital maintenance for the next 100 years is expected to be $10.71M (2024 dollars). The estimated annual sustainable infrastructure reserve contribution for buildings is $1,007,700, while the current funding is $576,700. If this funding level continued, then the City of Colwood would face an additional $43.1M in its cumulative funding gap by 2123.

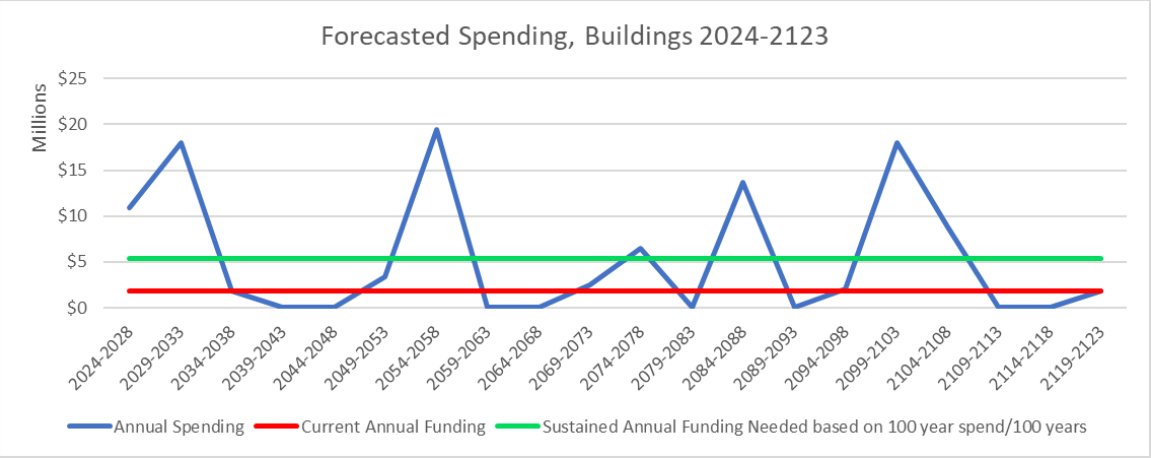


FIGURE 6: FORECASTED SPENDING, BUILDINGS 2024-2123

Westshore RCMP Building

In March of 2022 an options analysis was conducted to study the need for a larger RCMP detachment based on growth perception and policing needs. The feasibility study recommended that a building size exceeding 92,000 square feet and 2.5 acres of parking was needed to support policing over a 20-year horizon. The capital cost estimate for the facility exceeded $80M, of which Colwood's contribution would be over $20M.

At the November 20, 2023 City of Langford Council Meeting, Langford passed a resolution to request a subregional service from the Capital Regional District for funding a joint RCMP detachment capital project[3]. Should such a subregional service be established, costs for the detachment would be borne via regional requisition. The City would recover this requisition by levying a CRD property tax levy outside of its general property tax stream.

On May 2, 2022, the City endorsed the City of Colwood Facility Feasibility Study (Kasian, 2022) as a master plan guide for the municipal complex, specifically a new public works operations facility. The PlanAt the April 22, 2024 Regular Meeting of Council, staff was instructed to proceed with an Alternative Approval Process to undertake borrowing for the Public Works Operating Facility, with estimated construction costs of $8,857,454.

Borrowing for these facilities at current indicative 10-years would have the following financial impact:

Facility	Tax Increase for Debt Principal	Tax Increase for Debt Interest	Total tax increase required
Public Works Operating Facility	0.78%	1.95%	2.73%
RCMP Detachment	1.76%	4.41%	6.17%

Assumptions:

- Interest rate: 4.68%
- Capitalization Rate: 3.70%
- Amortization Period: 30 Years

[3] https://pub-langford.escribemeetings.com/FileStream.ashx?DocumentId=8041

Road Infrastructure

The City of Colwood maintains a significant road network, including approximately 102.3km of asphalt and 73.7km of sidewalk. Much of the City of Colwood's road network, including multiple bridges (approximately 20km) is utilized significantly by the region's citizens.

Active Transportation Plan

The Active Transportation Network Plan produced by Urban Systems in 2021 provided priority active transportation infrastructure projects for consideration with respect to the City's 10-year capital plan. These comprised 20 projects, 11 sidewalk projects and 9 cycling projects, with a combined approximate cost of $12.1 million to be pursued over the following 10 years. These considerations to the replacement costing of current infrastructure assets have not been incorporated into Sustainable Infrastructure Replacement Planning. The Plan aims to resolve funding for existing infrastructure only. Additional property tax, grant , Development Cost Charge, or user fee revenue would be necessary to fund new infrastructure.

Road Inventory

TABLE 29: ROAD INVENTORY OVERVIEW

Structure	Service Life (Top/Base)	Quantity	Current Replacement Cost[1]	Annualized Cost	% Consumed
Local	33/100	67.3 km/426,000m^2	$78,855,400	$1,686,600	39%
Collector	33/100	16.1 km/140,000m^2	24,733,200	544,000	39%
Arterial	33/100	14.6km/202,000m^2	36,735,600	783,800	39%
Other Road	33/100	2.0km/10,000m^2	1,833,600	40,900	14%
Total Roads		100.0km/780,000m^2	$142,157,800	$3,055,300	39%
Bridges	38 years	14 each	4,277,300	112,400	96%
Curb & Gutter	50 years	60.0km	9,645,400	192,900	30%
Sidewalk	80 years	73.7 km/121,206m^2	16,755,000	209,400	16%[4]
Streetlights	75 years	1,536 each	13,355,000	178,100[3]	12%
Traffic Signals	23 years	13 each	1,265,000	54,500	35%
Trails	125 years	21.9 km	8,126,900	66,200	n/a
Total			$182,227,400	$3,690,700	26%

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 top coat 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.

3: Replacement costs of poles borne by BC Hydro.

4: Sidewalk installation dates were assumed when not individually known to have been the same date as their respective roads.

Unit rates used to determine road replacement costs above are as follows:

Road Classification	Road Top/ square meter	Road Base/ square meter	Total/ Square meter
Local	$100.00	$90.00	$190.00
Collector	$140.00	$105.00	$245.00
Arterial	$140.00	$120.00	$260.00
Other Road	$140.00	$105.00	$245.00
Sidewalk			$180.00

Road Condition Assessment

In 2019 MS Infrastructure Management Services, Ltd. was contracted by the City of Colwood to conduct a pavement condition assessment and analysis on 91kms of the City's of Colwood maintained asphalt roadways. The City of Colwood's roads were rated with a Pavement Condition Index (PCI) Score in 2019. The City of Colwood's average score was found to be approximately 72, which is above the estimated national average of between 60 and 65. Approximately 49% of roads were found to be in very good or excellent condition.

The report outlined spending options for the City of Colwood to maintain or improve its PCI score. With that though the report also mentions that if the current budget of $1.1 million is maintained the backlog will remain at 3% with an average PCI score of 71. While FIT concurs that the backlog for roads infrastructure is at or just below 1% FIT's evaluation reviews the next 100 years, not just the PCI evaluation period of 10 years, and for that reason $1.1 million is not a sustainable budget amount for Roads infrastructure.

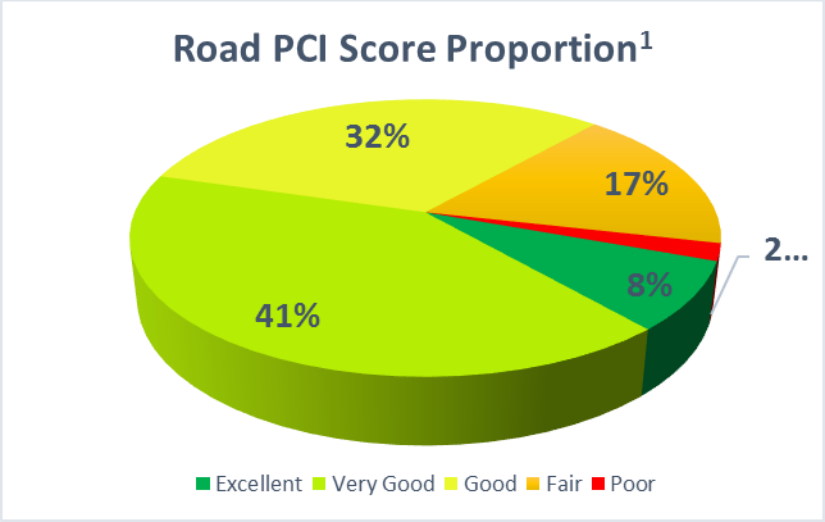


FIGURE 7: ROAD PCI SCORE PROPORTION

1: Source: Pavement Management Analysis Report. (2020, February). IMS Infrastructure Management Services

Roads Condition Assessment

TABLE 30: ROAD CONDITION ASSESSMENT

Asset	Overall	Condition & Performance	2023 Capacity Vs. Need	2023 Funding Vs. Need	2019 Overall	2019 Capacity Vs. Need	2019 Funding Vs. Need	Condition & Performance /PCI[1]
Local	C	C	B	D	C+	A	F	B/69
Collector	C	B	C	D	C+	B+	F	B+/73
Arterial	C-	C	C	D	C+	B	F	B/68
Bridges	C	C	B	D	C+	B+	F	B[2]/N/A
Curb & Gutter	C	C+	C+	D	C+	A	F	B/N/A
Sidewalk	C	C+	C+	D	C	B-	F	B/N/A
Other	C+	C+	B-	D	C	B	F	B/N/A
Overall by Column	C+	C+	B-	D	C+	B+	F	D

1: PER PAVEMENT MANAGEMENT ANALYSIS REPORT. (2020, FEBRUARY). IMS INFRASTRUCTURE MANAGEMENT

2: Per Bridge Inspection Reports 2020, Herold Engineering

Road Spending Forecast

TABLE 31: ROADS FUNDING SNAPSHOT

Forecasted Spending, Road Replacement 2024-2123	$362.4M
Sustainable Annual Funding	$3,868,800
Current Annual Funding	$1,371,700
Annual Funding Gap	$2,497,100
100-year Funding Gap	$249.7M

34.7% of the City of Colwood's road network is well through its estimated useful life. This suggests that almost 35% of the network will be due for replacement soon. Given that the replacement cost of the road network is valued at approximately $195.5M, the City of Colwood can expect significant replacement costs in the midterm. These costs will be 77% met by the current funding but will be safeguarded to sustainability by implementing the additional recommendations in the Plan.

Modelling indicates that the City of Colwood may spend approximately $362.4M on roads over the next 100-years. Approximately $1.6M of this amount is for a backlog of road segments that have reached or exceeded their estimated useful lives. This backlog is forecasted to grow significantly and become unmanageable as a result of significant numbers of Roads assets reaching their estimated useful lives in 2045 and 2075 – see Figure 8 below.

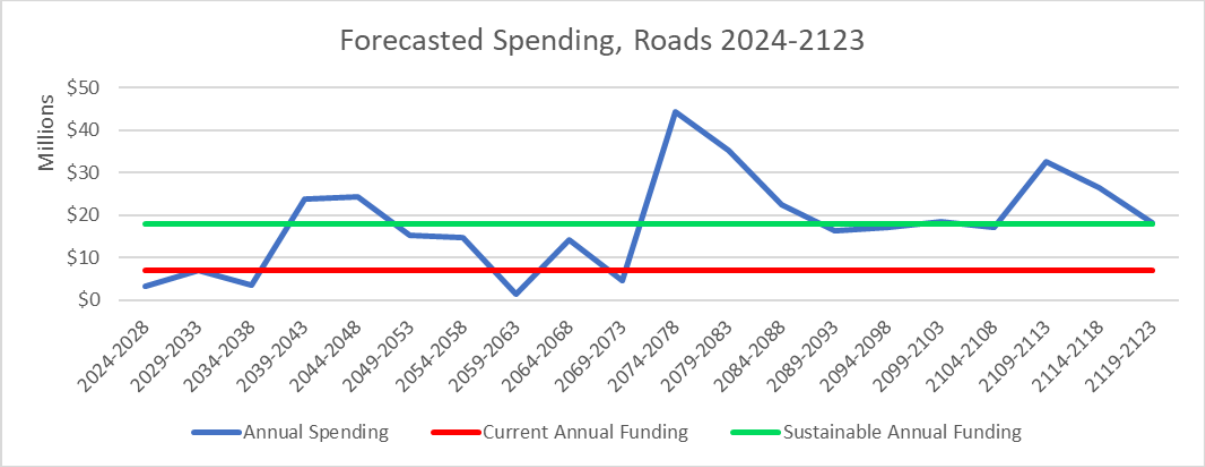
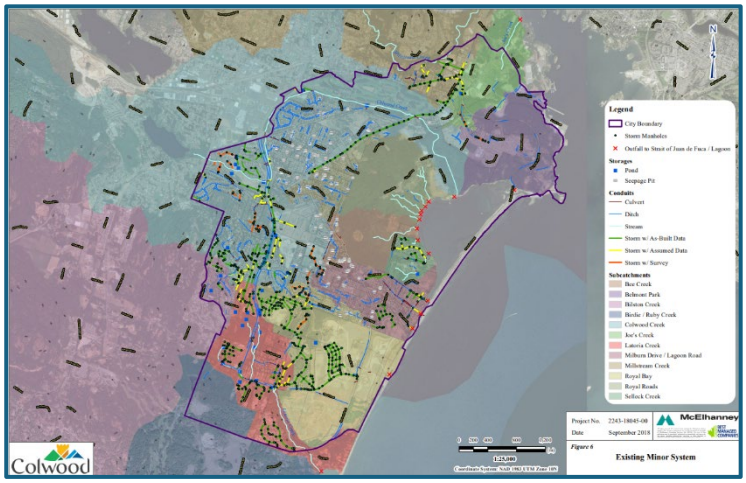


FIGURE 8: FORECASTED SPENDING, ROADS 2024-2123

Drainage

Within the City of Colwood, there are 12 drainage catchments. These catchments drain into 16 outfalls, which discharge into various locations including the Esquimalt Lagoon, Esquimalt Harbour, the Strait of Juan de Fuca, and the Albert Head Lagoon. The City's mains are relatively young with an estimated average age of just over 22 years. The City also manages an inventory of approximately 29 ponds and an open channel network exceeding kilometers.



Drainage Inventory

TABLE 32: DRAINAGE INVENTORY OVERVIEW

Structure	Service Life	Quantity	Replacement Cost	Annualized Cost	% Consumed
Mains	60-80 years	54.2 km	$148,108,300	$1,853,200	28.5%
Ditches	n/a	35.3 km	12,355,900	12,400	3.5%
Culvert	80 years	3.54 km	3,521,400	44,000	34.6%
Laterals	80 years	Unknown	Included in main cost	Included in main cost	28.5%
Total			$163,985,600	$1,909,600	20.2%

The 2019 Sustainable Infrastructure replacement plan estimated that the City owned and operated approximately 39 kilometers of stormwater main. This estimate was based on the 2019 Colwood Stormwater Master Plan and available inventory data. Since then, significant main inventory has been added due to development. In addition, the City has been conducting field inspections and reviewing Automatic Computer-Aided Design drawings to further populate more accurate inventory records.

Unit rates used to determine drainage asset replacement costs above are as follows:

Main size	Main/ lineal meter	100mm service + manhole	total
50-100 mm	$1,119	$1,324	$2,443
150 mm	$1,153	$1,324	$2,477
200 mm	$1,187	$1,324	$2,511
250 mm	$1,289	$1,324	$2,613
300 mm	$1,341	$1,324	$2,665
450 mm	$1,630	$1,324	$2,954
600mm	$1,852	$1,324	$3,176

Unit rates include Engineering and Contract administration, bedrock excavation, asphalt restoration, and 40% contingency.

Drainage Condition Assessment

TABLE 33: DRAINAGE CONDITION ASSESSMENT

Asset	2023 Overall	2023 Condition and Performance	2023 Capacity Vs. Need	2023 Funding Vs. Need	2019 Overall	2019 Condition and Performance	2019 Capacity Vs. Need	2019 Funding Vs. Need
Mains	C	B	B	D	C	B	A-	F
Laterals	C	B	B	D	C	B	A-	F
Manholes	C	C+	B	D	C	B	A-	F
Culverts	C	C	B	D				
Overall	C	B-	B	D	C	B	A-	F

Drainage Spending Forecast

TABLE 34: DRAINAGE FUNDING SNAPSHOT

Forecasted Spending, Drainage 2024-2123	$152.1
Sustainable Annual Funding	$1,909,600
Current Annual Funding	$677,000
Annual Funding Gap	$1,232,600
100-year Funding Gap	$123.3M

Modelling indicates that the City of Colwood may spend approximately $152.1 (2024 $s) on Drainage infrastructure replacement over the next 100-years. The District's Drainage network is relatively young, being an estimated 27% through its useful life on average.

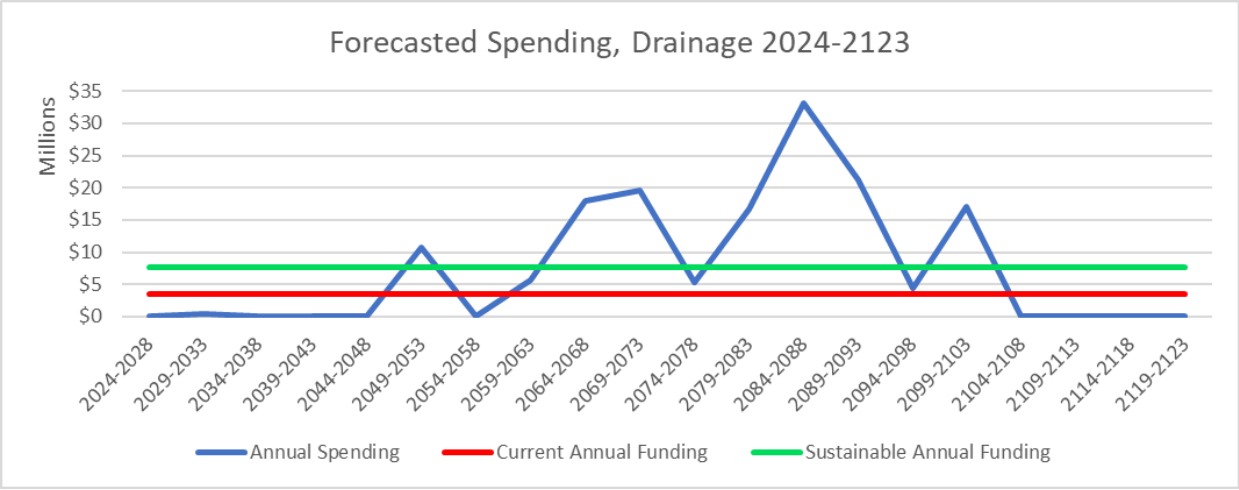


FIGURE 9: FORECASTED SPENDING, DRAINAGE 2024-2123

Sanitary Sewer Infrastructure

The City's Sewer Utility operates a sanitary-only sewer collection system in four core areas. Each of these areas pay a local area service tax for the capital cost of sewer construction. In total, there is over 60 kms of sewer pipe and 10 pump stations. The City of Colwood's existing sewer infrastructure system connects to the Capital Regional Districts conveyance system, which carries wastewater across the core area into Victoria for primary treatment.

Sanitary Sewer Inventory

TABLE 35: SANITARY SEWER INVENTORY OVERVIEW

Structure	Service Life	Quantity	Replacement Cost	Annualized Cost	% Consumed
Gravity Main	60-80 years	51.7km	$123,959,200	$1,552,000	22.4%
Pressure Main	60-80 years	8.9km	22,734,200	284,200	24.9%
Laterals	80 years	Unknown	Included in main cost	Included in main cost	22.4%
Manholes	80 years	744 ea.	Included in main cost	Included in main cost	22.4%
Manholes	80 years	100 ea.	Included in main cost	Included in main cost	22.4%
Pump Station	32 years	10 ea.	1,300,000	40,600	60.0%
Total			$147,993,400	$1,876,800	22.2%

Unit rates used to determine sanitary sewer asset replacement costs above are as follows:

Main size	Main/ lineal meter	100mm service + manhole + inspection chamber	total
50-100 mm	$1,119	$1,324	$2,443
150 mm	$1,153	$1,324	$2,477
200 mm	$1,187	$1,324	$2,511
250 mm	$1,289	$1,324	$2,613
300 mm	$1,341	$1,324	$2,665
450 mm	$1,630	$1,324	$2,954
600mm	$1,852	$1,324	$3,176

Unit rates include Engineering and Contract administration, bedrock excavation, asphalt restoration, and 40% contingency.

Sanitary Sewer Condition Assessment

TABLE 36: SANITARY SEWER CONDITION ASSESSMENT

Asset	2023 Overall	2023 Condition and Performance	2023 Capacity Vs. Need	2023 Funding Vs. Need	2019 Overall	2019 Condition and Performance	2019 Capacity Vs. Need	2019 Funding Vs. Need
Gravity Mains	B-	B+	B+	D	B	B-	A-	D
Pressure Mains	B-	B+	B+	D	B	B-	A-	D
Laterals	B-	B+	B+	D	B	B-	A-	D
Lift Stations	B-	B+	A	D	B	B-	A-	D
Manholes	B-	B+	B+	D	B	B-	A-	D
Overall	B-	B+	B+	D	B	B-	A-	D

Sanitary Sewer Spending Forecast

TABLE 37: SANITARY SEWER FUNDING SNAPSHOT

Forecasted Spending, Sanitary Sewer 2024-2123	$150.6M
Sustainable Annual Funding	$1,876,800
Current Annual Funding	$715,100[1]
Annual Funding Gap	$1,161,700[1]
100-year Funding Gap	$116.2M[1]

1: Note that this figure assumes that a portion of the unallocated tax funding would be apportioned to the sewer utility infrastructure. However, if the City selects a sewer user fee funding model, the current funding is $77,000, leaving a $1,799,800 funding gap.

Modelling indicates that the City of Colwood may spend approximately $150.6M on Sanitary Sewer replacement over the next 100 years. The City of Colwood's Sanitary Sewer infrastructure is estimated to be 22.2% through its estimated useful life. 95.8% of the Sanitary Sewer infrastructure ($144.2M) is expected to come due for replacement between 2074 and 2103. Although the time before a significant portion of the expected replacement costs is a relatively long time off, with modelling and review the effort is much more evenly spread out over a longer period if these additional recommendations noted in the Plan are implemented.

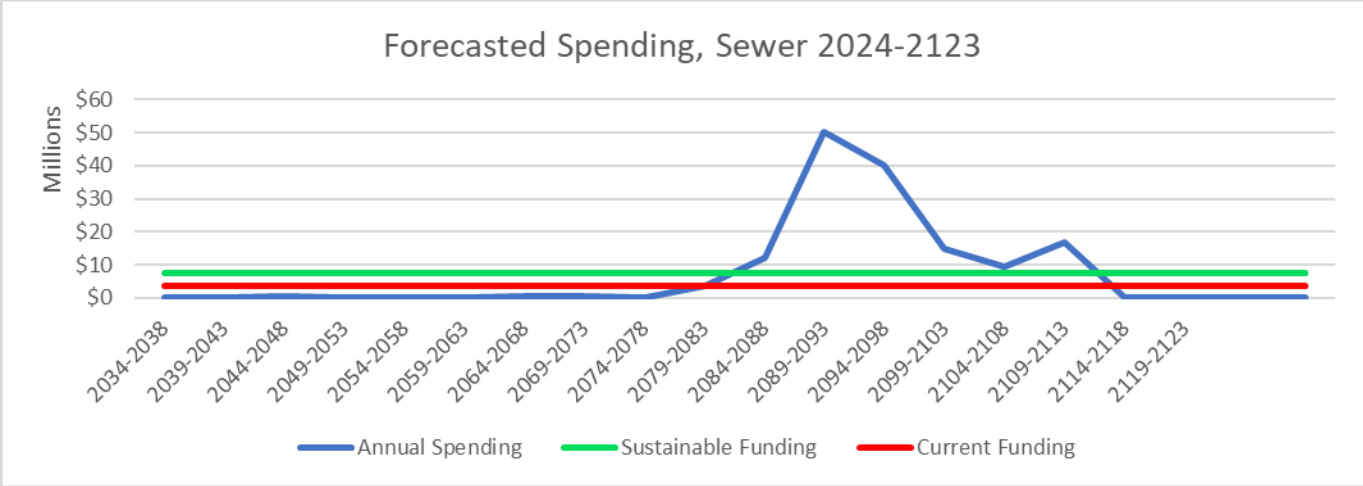


FIGURE 10: FORECASTED SPENDING, SANITARY SEWER 2024-2123

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.

Asset Renewal: Asset renewal refers to the refurbishment or major maintenance that substantially extends an asset's service life. Asset renewal does not include routine maintenance.

Boulevards: Generally green space down the meridian or sides of roads.

Community Park: Generally large parks provide passive and active recreation options, with a range of amenities of interest to the entire community. These spaces may also contain significant environmental features.

Cul-de-Sac: Generally green space in the island of the cul-de-sac.

Forced Growth: Relates to costs that the City of Colwood 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 cities 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.

Neighbourhood Park: These are generally smaller in area than community parks and respond to the open space and recreation needs of residents. Amenities include passive and active recreation uses, along with significant open space.

Non-Market Change Revenue: Taxation revenue that results from taxable land or buildings that were not subject to taxes in the previous year. For example, newly built taxable buildings, previously exempt taxable property, newly subdivided land, or valuation increase due to zoning amendments.

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

Replacement Value: The value expected to pay to replace an asset when its useful life has been realized. The dollars expressed for this are in current dollars.

Request for Proposal (RFP): A formal procurement document that outlines an organization's intent to purchase a good or service. The buyer issues the RFP to provide background information to potential vendors and invites them to submit a proposal to meet the requirements.

Service Life, also Estimated Useful Life: The estimated useful life of an asset or group of assets. These determinations are based on National Asset Management Strategy (NAMS) estimated useful lives of assets with considerations for local conditions.

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 City staff 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 2022 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 of Colwood 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. Broad findings include estimated annual sustainable funding, annual funding gap, and total replacement costs. A sensitivity analysis was conducted by modelling a change in estimated useful lives and replacement costs of the City's stormwater, sanitary sewer, and road infrastructure. Overall, the sensitivity analysis confirms Colwood is facing an annual funding gap that will need to be addressed now or into the future.

	Scenario A - Optimistic	Scenario B – Plan Findings	Scenario C - Pessimistic
Estimated Useful Life	+25%	-0%	-25%
Replacement Costs	-25%	-0%	+25%

TABLE 38: SENSITIVITY ANALYSIS

	Scenario A	Scenario B	Scenario C
Replacement Costs[1]	452.2M	565.6M	679.1M
100-Year Spending	585.7M	817.3M	1,114.0M
Annual Sustainable Funding	6.6M	9.3M	11.5M
Annual Funding Gap	2.3M	5.1M	7.3M
% Sustainability	64.6%	45.5%	36.8%
$ Consumed	123.0M	176.1M	214.3M
% Consumed	27.1%	31.1%	31.6%

1: Depreciable assets only, not including Land.

Appendix C: Summary of 2024 SIRP Recommendations

TABLE 39: SUMMARY OF 2024 SIRP RECOMMENDATIONS

Funding Recommendation 1	Achieve Sustainable Funding Levels
Funding Recommendation 1a	Immediately dedicated $192,000 (estimated 60%) of the City of Colwood's annual casino revenues toward infrastructure replacement.
Funding Recommendation 1b	Convert all debt servicing costs into annual infrastructure funding when debt expires.
Funding Recommendation 1c	Establish a 5% utility tax increase for 10 years.
Funding Recommendation 2	Establish Dedicated Funding Streams for Major Asset Classes
Policy Recommendation 1	Amend the Purchasing Power Delegation Bylaw No. 1748 2019 to formally integrate lifecycle costing consideration into Procurement.
Policy Recommendation 2	Integrate Lifecycle Costing into Budget Deliberations
Policy Recommendation 3	Integrate Lifecycle Costing Land-Use Decisions
Policy Recommendation 3a	Amend subdivision bylaw such that approving officer must consider lifecycle costing in subdivision decisions.
Policy Recommendation 3b	Require lifecycle costing analysis be conducted when rezoning applications are prepared
Policy Recommendation 3c	Utilize Non-Market Change revenue to increase transfers to reserves for capital replacements
Investment Recommendation 1	Utilize MFA investment vehicles to achieve a reasonable rate of return

Appendix D: Useful Life Assumptions

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.

TABLE 40: USEFUL LIFE ASSUMPTIONS

	NAMS	Colwood Selected	Comment
Road Top – Local	15 - 25 Years	33 Years	PCI Scores supported a longer useful life
Road Top – Collector	12 – 29 Years	33 Years	
Road Top – Arterial	12 – 29 Years	33 Years	
Road Base – Local	50 - 100 Years	100 Years	
Road Base – Collector	80 Years	100 Years	
Road Top – Arterial	80 Years	33 Years	
Storm Main – Asbestos Concrete	40 - 70 Years	60 Years	
Storm Main – Corrugated Metal	40 - 90 Years	80 Years	
Storm Main – Ductile Iron	40 - 80 Years	80 Years	
Storm Main – Galvanized Steel	40 - 90 Years	90 Years	
Storm Main – High Density Polyethylene	50 - 100 Years	80 Years	
Storm Main – PVC	60 - 100 Years	80 Years	
Storm Main – Vitrified Clay	50 - 100 Years	80 Years	
Storm Main – Concrete	60 - 150 Years	80 Years	
Storm Laterals	N/A	Main Life	
Sanitary Main – Asbestos Concrete	40 - 70 Years	75 Years	
Sanitary Main – Ductile Iron	40 - 80 Years	80 Years	
Sanitary Main – High Density Polyethylene	50 - 100 Years	80 Years	
Sanitary Main – PVC	50 - 100 Years	80 Years	
Sanitary Main – Concrete	40 - 100 Years	80 Years	
Sanitary – Pump Stations	Varies	32 Years	
Facilities – Floor Coverings	Varies	25 Years	
Facilities – M&E	Varies	25 Years	
Facilities – Roof	Varies	25 Years	
Facilities – Windows	Varies	25 Years	
Facilities – Electrical	Varies	25 Years	
Facilities – Full Replacement	75 Years	80 Years	
Vehicles – Pickup Trucks	Not Applicable	10 Years	Per Colwood Fleet Policy
Vehicles – Heavy Trucks	Not Applicable	12 Years	Per Colwood Fleet Policy
Vehicles – Electric	Not Applicable	13 Years	Per Colwood Fleet Policy
Vehicles - Trailers	Not Applicable	25 Years	Per Colwood Fleet Policy

Appendix E: Recommendations from 2019 SIRP and their Action Status

Policy recommendations from 2019 SIRP and their action status

TABLE 41: 2019 POLICY RECOMMENDATIONS AND STATUS

Policy Recommendation #	2019 Policy Recommendations	Action Status
1	Use new construction taxation revenue to offset incremental infrastructure life-cycle costs . Use excess new construction revenue to increase transfers to reserves for sustainable infrastructure until the funding gap is closed.	Implemented
2	Contributed assets must be accompanied by budget approval for incremental operating and sustainable infrastructure replacement costs.	Not implemented
3	Budget approval for new capital services must be accompanied by budget approval for full life-cycle costs.	Implemented (limited)
4	Convert debt servicing payments into sustainable infrastructure replacement funding as debt is retired.	Not implemented – debt is for LSAs

Operational recommendations in 2019 SIRP and their action status

TABLE 42: 2019 OPERATIONAL RECOMMENDATIONS AND STATUS

Source	Amount	Description	Action Status
Investment Returns	$300,000	As a result of more active portfolio management, growing reserve balances and a higher interest rate environment, an additional $300,000 is expected in investment returns starting in 2019.	Implemented
Major Roads Budget	$200,000	The City's major road budget has been under-utilized in recent years. Staff will recommend that the funds	Implemented

		be used to establish a core capital budget with any annual underspent funds transferred to reserve at year-end.	
Sewer Capital Levy	$200,000	The City finances the construction of its sewer infrastructure with various Local Area Services taxes. When the debt on each area expires, it is recommended that ratepayers begin paying for future infrastructure replacement via a sewer capital user fee.	Will be implemented as debts expire.
RCMP Contract Budget	$200,000	The City currently budgets for 16.6 policing strength but actual strength often falls short. This will often result in an operating budget surplus. As there are very little funds set aside for the detachment replacement, it is recommended that the annual surplus be transferred to the building replacement reserve.	Implemented

Appendix F: List of Figures & Tables

Figure 1: 100 Year Funding Gap Forecast 7
Figure 2: Asset Management BC Framework 14
Figure 3: Major Assets - Proportion Consumed ..... **Error! Bookmark not defined.**
Figure 5: Lifecycle Costs of New Development 32
Figure 9: Vehicle Replacement Spending 2024-2123 42
Figure 14: Drainage Catchment Plan 50

Table 1: Asset Management Program Components 16
Table 2: Asset Inventory Valuation 17
Table 3: Asset Inventory Consumption 18
Table 4: Current Infrastructure Funding 19
Table 5: Summary of Condition Assessments 20
Table 6: Current Reserve Balances 21
Table 7: Annual Funding Gap 22
Table 8: Acquisition Costing Method for Procurement 30
Table 9: Lifecycle Costing Method for Procurement 30
Table 10: Operating vs Capital Budget 31
Table 11: Budget Devoted to Providing Capital Services 31
Table 12: Natural Asset Valuation Methods 35
Table 13: Land Value Summary 36
Table 14: Park land Listing 36
Table 15: Land Under Building Listing & other Land 37
Table 16: Lifecycle Costing Valuation of Rivers, Creeks, and Streams 38
Table 17: Boulevard Trees Inventory 39
Table 18: Trees Inventory (non-boulevard trees) 39