
FINANCE AND CIVIC DEVELOPMENT COMMITTEE

*HIS WORSHIP, THE MAYOR
AND COUNCILLORS*

SUBJECT: ASSET MANAGEMENT - PLANNING FOR THE FUTURE

RECOMMENDATIONS:

1. THAT Council support the recommended strategies, as outlined in Section 4 in this report.
2. THAT Council direct staff to include the recommended strategies in future asset management planning work.

REPORT

The Finance and Civic Development Committee, at its meeting held on 2013 March 28, received and adopted the *attached* report providing an overview of the state of Burnaby's infrastructure and presenting the short and long term asset management strategy for consideration.

Respectfully submitted,

Councillor D. Johnston
Chair

Councillor C. Jordan
Vice Chair

Councillor P. McDonell
Member

Copied to:	City Manager Deputy City Manager (L. Chu) Director Planning & Building Director Finance Director Parks, Recr. & Cult. Services A/Director Engineering Fire Chief Chief Librarian Chief Information Officer
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TO: CHAIR AND MEMBERS
FINANCE AND CIVIC DEVELOPMENT
COMMITTEE

DATE: 2013 March 18

FROM: DEPUTY CITY MANAGER

SUBJECT: ASSET MANAGEMENT - PLANNING FOR THE FUTURE

PURPOSE: To provide the Committee and Council an overview of the state of Burnaby's infrastructure and to present the short and long term asset management strategy for consideration.

RECOMMENDATION:

1. **THAT** Council support the recommended strategies as outlined in Section 4 in this report and staff be directed to include the recommended strategies in future asset management planning work.

REPORT

1.0 INTRODUCTION

Public infrastructure provides the foundation for a strong economic growth in modern cities. The level of investments and growth in a community depends on quality and dependable community infrastructure ranging from roads, water and sewer to libraries and recreation facilities. The management of public infrastructure has become a subject of increasing interest for local and regional governments in recent years. The increasing interest may partly be attributed to the concerns of aging infrastructure, funding gaps and the introduction of new accounting standards which have led to the call for improvement in how assets are managed and funded.

This report provides an overview of Burnaby's state of the public infrastructure with a comparison to the national infrastructure survey results published by the Federation of Canadian Municipalities (FCM) in 2012. Based on the current state of assets and projected requirements, short and long term asset management strategies are recommended for the coming years.

2.0 STATE OF BURNABY'S INFRASTRUCTURE

According to a report published by FCM, municipal governments are responsible for more than 60% of Canada's infrastructure, yet they collect just 8% of Canada's total tax revenue. The report also cites that many Canadian cities are facing the challenges of repairing and maintaining the aging infrastructure built during the 1950's and 1960's building boom. The challenges are further complicated by the lack of a reasonable and reliable source of funding beyond the local property tax system.

Burnaby like many other Canadian cities, is entering into a phase where the public works and utility systems built in the 1950's and 1960's are reaching the end of their life cycle and needing replacement. Burnaby's infrastructure is categorized in accordance with the Local Government Data Entry reporting structure and is estimated at \$3.9 billion, present day value (Figure 1). The largest component of Burnaby's capital assets is roads which accounts for approximately 31% of the total City assets in value.

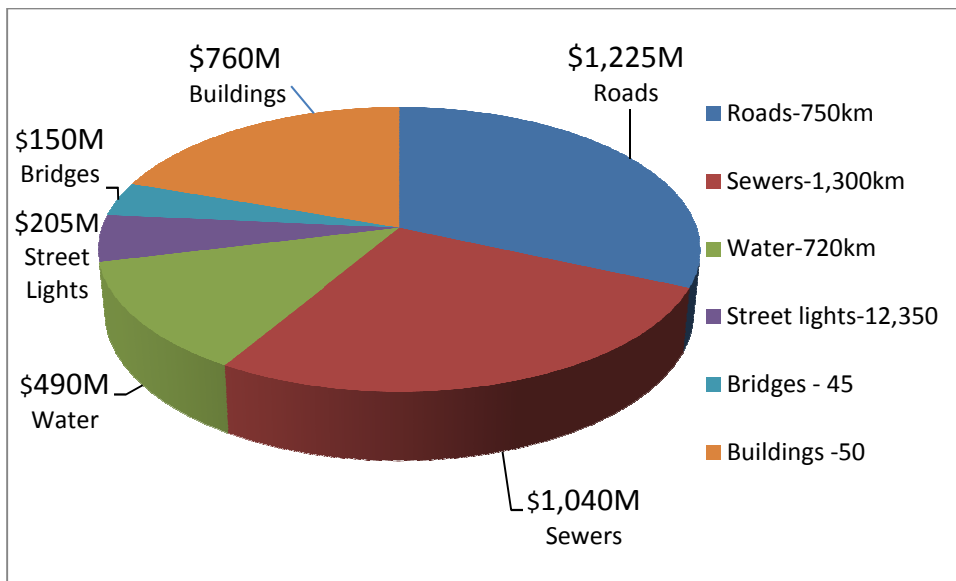


Figure 1. Burnaby's Public Infrastructure Assets

The City invests a significant amount of funds annually in asset renewal and replacement. Aging watermains and sewers constructed in the 50's and 60's during the development boom are included in the replacement programs. Roads are resurfaced with new asphalt or reconstructed to maintain public road safety and riding quality and to prolong their service life. The average age of each asset class comparing to its useful life is presented in Figure 2. Useful life is determined under the definition contained in the Public Sector Accounting Board (PSAB) accounting rules based on usage, maintenance, capacity for the purpose of capital asset depreciation and amortization calculation. The actual life

cycle of an asset such as roads may be extended beyond the estimated useful life when best management practices (crack sealing and pavement overlay) are followed.

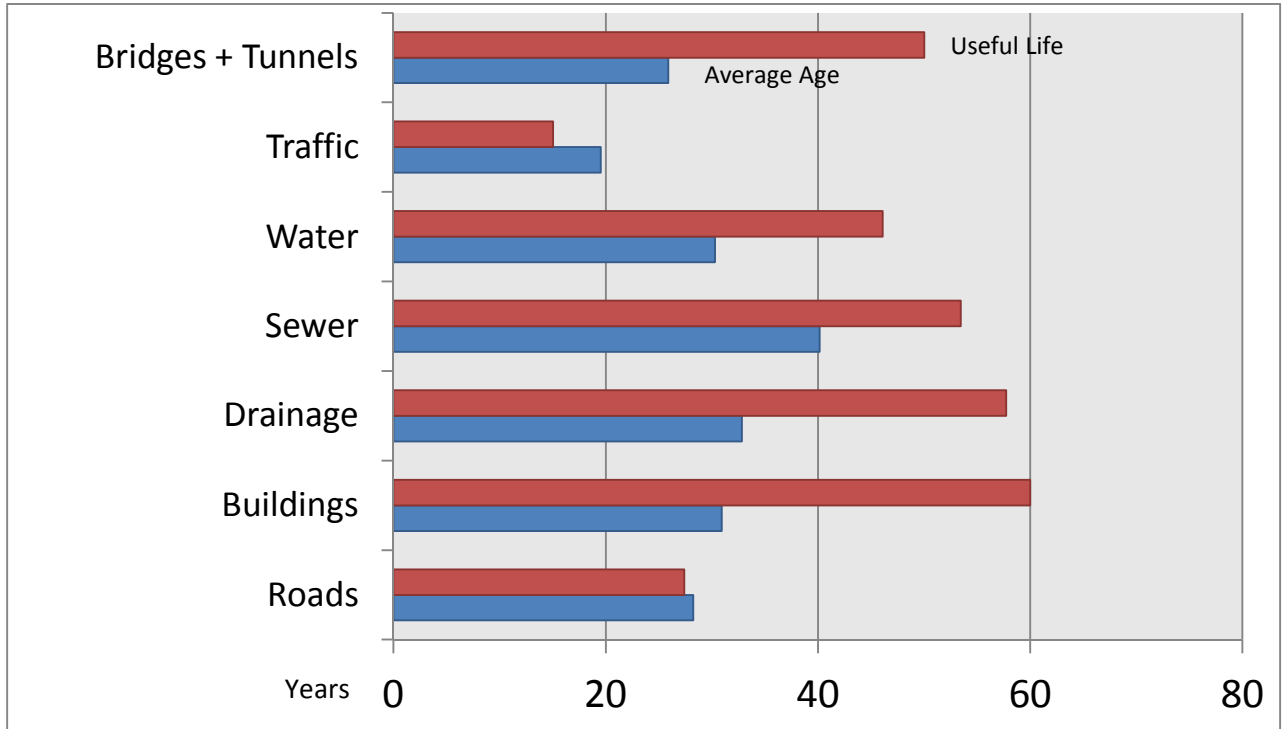


Figure 2. Age of Burnaby's Infrastructure

The above figure shows the average life of the traffic (street lights) assets have extended beyond their useful life. The availability of asset data and analysis conducted in recent years allows staff to identify the street lights replacement need and to include appropriate capital funding in the City's 5 year capital program for replacement. Figure 2 also shows the road assets are at the end of the useful life however, best management practices such as crack sealing, pavement overlay and skin patching have been developed and implemented to extend the service life and to maximize returns on the investment. Overall, the average age of Burnaby's public infrastructure including civic buildings has reached approximately 75% of its useful life.

3.0 BURNABY'S INFRASTRUCTURE IN COMPARISON WITH OTHER CANADIAN CITIES

In 2012, FCM released the findings of the first-ever Canadian Municipal Infrastructure Report Card. This major study of the state of municipal roads, wastewater, drinking water and stormwater systems across Canada was undertaken jointly by FCM, the Canadian Construction Association, the Canadian Public Works Association and the Canadian Society for Civil Engineers. The purpose of the report was to draw attention to the aging

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condition of the Canadian infrastructure and the growing federal-municipal infrastructure funding gap. One hundred and twenty three municipalities representing almost 20 million Canadians participated in the study.

The national study laid the foundation for developing a rigorous, repeatable process for assessing the condition of Canada’s infrastructure. The report also points out the importance of having an asset management plan in place for the local governments to increase the longevity of the assets and optimize the investment in maintenance, rehabilitation and replacement. Over 40% of the cities participated in the study have no physical data on the condition of their buried infrastructure.

Despite the lack of technical sophistication and analytical tools to provide the required asset data in some municipalities, the 2012 Infrastructure Report Card provides a reasonable snapshot of a cross section of the country’s infrastructure. The summary findings of the study are presented in Table 1.

Asset Category	Overall Grade	Comments
Roads	Fair	The infrastructure shows signs of deterioration and requires attention, with some elements exhibiting significant deficiencies. 1 in 4 roads in Canada are operating above capacity. Nationally, \$91 billion are required to replace roads in fair to very poor condition.
Wastewater	Good	With new and more stringent federal regulations, even good or very good wastewater infrastructure may require upgrading or replacement.
Drinking Water	Good	15.4% of the system ranked “fair” to “very poor”. \$26 billion are required to replace these water infrastructures.
Stormwater	Very Good	Although the stormwater pipes are generally in good condition due to their younger age, many systems are not adequate to handle major storm events which are becoming more frequent and more intense.

Table 1. Summary Results of the 2012 Canadian Infrastructure Report Card

Although the overall infrastructure scores are good, the report points out that there is no reason for complacency. The replacement cost of infrastructure falling between “fair” and “very poor” is estimated at \$171.8 billion. In order to keep the infrastructure in good condition into the future, it will require increasingly larger investments. The study also recommends that municipalities need to improve their internal asset management system for more informed infrastructure decisions and better financial projections.

Burnaby is one of the 123 municipalities across Canada participated in the national survey. The survey results may also be used to compare the infrastructure rating of individual municipality with the national average. A comparison of Burnaby’s public infrastructure rating and the national average rating is presented in Figure 4.

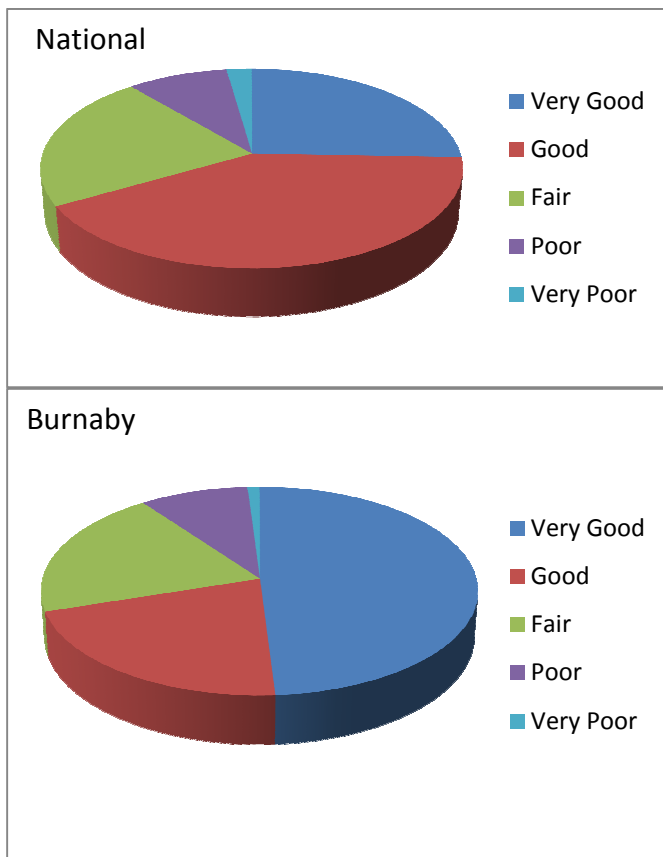


Figure 4. Infrastructure Report Card Canada- Overall Infrastructure Condition

As shown in Figure 4 above, approximately 70% of Burnaby’s public infrastructure scores “good” to “very good” with the remainder falls between “fair” and “very poor”. Burnaby currently has about \$300 million of asset replacement backlog and it invests \$40 million annually in asset replacement. Based on a projection of future asset replacement

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requirements, it is estimated that an annual amount of \$50 million is required for asset replacement for the next 30-year horizon.

4.0 BURNABY'S ASSET MANAGEMENT PLAN

4.1 ASSET MANAGEMENT DEFINED

According to Asset Management Governance Framework for Canada, asset management can be defined as an integrated approach involving planning, engineering and finance to effectively manage infrastructure and to provide reliable and cost efficient services to the public; and to inform the public and decision makers about infrastructure issues and trends.

Generally, asset management consists of six very simple building blocks which may be applied to management of capital assets of varying degree of complexity:

- 1) What do you own and where is it?
- 2) What is it worth?
- 3) What condition is it in?
- 4) What do you need to do to it?
- 5) When do you need to do it?
- 6) How much money do you need?

Burnaby has a comprehensive network of public infrastructure to serve its citizens and the business community. To protect its investment in the public infrastructure, Burnaby has taken an active role in developing the required technical and financial tools and solutions to manage the assets in an effective and cost efficient manner. In the late 1980's, Burnaby started to build an asset management plan and since that time, the plan has transformed from a single work management system (Hansen) to a multi-level asset management solution including geographic information data (ESRI) and advanced financial tools (SAP).

4.2 BURNABY'S CURRENT ASSET MANAGEMENT SOLUTION

In the past 25 years, Burnaby has developed its asset management plan combining advanced technologies and best management practices to address work management, asset replacement planning and forecasting, and accounting needs. Burnaby's current asset management solution can generally be divided into four areas:

A. Asset Inventory, History and Location

There are 855,000 work orders, 560,000 asset records and 228,000 customer service records that reside in Engineering's work management system

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(Hansen) to document asset maintenance, history and work orders. The City has created a GIS based web map program to track City assets, reference drawings, asset attributes and planning data including land use and population census data.

B. Asset Conditions

Burnaby has developed various surface and sub-surface inspection programs using CCTV technology to determine underground sewer pipe conditions on a 10 year cycle, and a computerized analytical model to assess arterial and collector road conditions and to predict future optimal pavement rehabilitation needs. In addition, bridges and sidewalks are inspected on a 3-year and 6-year cycles, respectively. The inspection reports and video recordings are stored in Hansen and attached to each asset record.

C. Asset Replacement and Growth Demand

The City acquired a Pavement Management computer model in 1989 to evaluate road surface and sub-surface conditions. Results of the modelling work are used to generate the annual pavement overlay plan and to project the 5-year pavement resurfacing needs. In addition, analytical computer models were created for the City's water and sewer systems to perform demand analysis, project future development needs and identify short and long term capital improvement programs.

D. Asset Finances

All financial transactions and cost data related to Burnaby's assets are captured in SAP for fund management, asset accounting and audit purposes.

As described above, Burnaby has made good progress in developing the essential elements of an asset management plan. With the transformation of a single work management system to a multi-faceted asset solution over the past two decades, it is imperative that these management elements be integrated seamlessly throughout the City's line of business. Burnaby has established and tested the building blocks of an effective asset management plan. It is now time to move forward towards integrating these building blocks to create a cohesive and solid asset management plan for the coming decades.

4.3 RECOMMENDED SHORT AND LONG TERM ASSET MANAGEMENT STRATEGIES

Building on the foundation of earlier works and the economic, social and environmental vision and policies adopted by Council, a matrix of short term (3

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years) and long term (more than 3 years) strategies are developed to enhance Burnaby’s ability to address current and future asset management needs. The strategies cover four key areas: technology, business process, communication and economic/social sustainability. The recommended strategies are presented in Table 2.

<i>Short Term (3 Years) Asset Management Strategies</i>
<p>Technology:</p> <ol style="list-style-type: none"> 1. Continue to use Hansen for asset data, maintenance and service records for linear assets (pipes and roads) and SAP as financial record of assets. 2. Review the Engineering and Finance asset management and accounting business processes and evaluate the feasibility of implementing an interface to allow an efficient and seamless transfer of asset data between Hansen and SAP.
<p>Business Process:</p> <ol style="list-style-type: none"> 3. Create a Joint Staff Asset Management Team that include representatives from the City Manager’s office, Planning, Engineering, Finance, Parks, IT, Library and Fire Departments to work towards developing long term sustainable asset management vision, best practices, standards and policies. Auditing and accounting requirements are to be included in the solution finding process.
<p>Economic and Social Sustainability:</p> <ol style="list-style-type: none"> 4. Undertake a sustainable services review for long term asset prioritization and capital program planning. 5. Conduct critical infrastructure review for future program planning.
<i>Long Term (> 3 years) Asset Management Strategies</i>
<p>Technology:</p> <ol style="list-style-type: none"> 1. Review the feasibility and cost of migrating Hansen to SAP.
<p>Communication:</p> <ol style="list-style-type: none"> 2. Develop bi-annual report cards on the state of the City’s assets, funding and trends to guide future asset management policy development and Council/public communication.
<p>Economic and Social Sustainability:</p> <ol style="list-style-type: none"> 3. Leverage cost sharing and financial investment from senior government (gas tax revenue, infrastructure funding, etc.) and the private sector (development servicing). 4. Consult the public on public infrastructure needs and priorities. 5. Create long term (10-20 years) asset management plans and reassess priorities and return on investment annually.

Table 2. Short and Long Term Asset Management Strategies

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5.0 CONCLUSIONS

Municipal infrastructure is the foundation of economic growth in a country. Local governments in Canada are responsible for 60% of the nation's public infrastructure. All of these public capital assets have a defined life cycle and require a significant investment by the local governments for service continuity. As these assets age and public demand for better health and safety related to public infrastructure grows, the need to establish better asset management practices and long term funding commitment for infrastructure renewal and replacement projects has become evident. Today, Canada's infrastructure is at a tipping point where the municipalities are faced with the challenge of aging assets while struggling to keep up with the level of asset replacement funding required.

Although Burnaby's overall infrastructure condition is ranked higher than the national average according to a report published by FCM, staff are mindful that there are no reasons for complacency. Based on the outstanding asset renewals backlog and future asset replacement projections, the annual capital asset replacement funding required for Burnaby is projected at \$50 million for the next 30 years, \$10 million higher than the current funding level.

To ensure quality public service can be maintained for all citizens in Burnaby and to achieve the goal of sustainable growth, improvements to asset management practices, better integration of technology and business process, and greater cost sharing from senior government form the essence of the asset management strategies recommended in this report. Therefore, it is recommended that Council supports the strategies outlined in Section 4 of this report and staff be authorized to include the recommended strategies in future asset management planning work.

Lambert Chu, P.Eng.
DEPUTY CITY MANAGER

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A/Director Engineering
Director Finance
Director Planning and Building
Director Parks, Recreation and Cultural Services
Fire Chief
Chief Librarian
Chief Information Officer