THE CITY OF GRANDE prairie

City of Grande Prairie

2021 State of Infrastructure Report

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Executive Summary

As one of the fastest growing and youngest communities in Alberta, the City of Grande Prairie (the City) owns, operates and maintains a substantial portfolio of infrastructure assets across different service areas. These assets support delivery of services – social, economic and environmental – that are essential to the well-being of the community and form an integral part of the City's long term financial and service delivery planning.

To continue to provide these services, it is important for the City to understand the current state of its assets. This information helps the City effectively and efficiently manage its infrastructure. With proper asset management, the City can foster local economic growth through ongoing investments in infrastructure. In addition, this information also helps us effectively plan quality services for the citizens of Grande Prairie.

In 2020, the City of Grande Prairie established a Corporate Asset Management Office, and this State of Infrastructure Report (SOIR) is the first tool to ensure that infrastructure assets are managed according to an evidence-based decision model. This would ensure that current levels of service are maintained in the most cost-effective manner while demonstrating leadership in municipal asset management planning by adopting the ISO 55000 global standards for asset management.

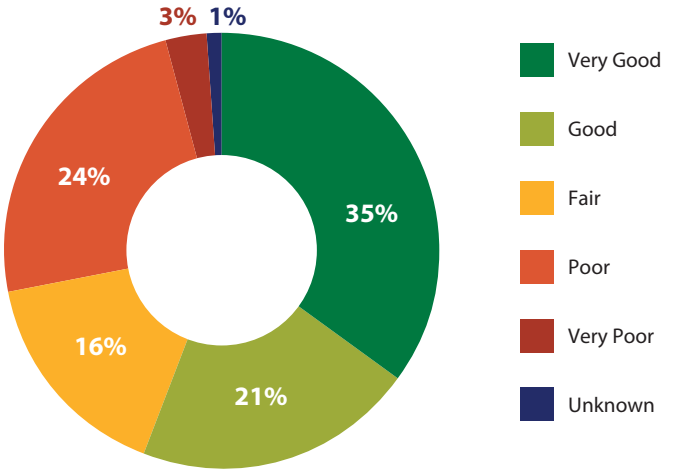
This State of Infrastructure Report (SOIR) documents the current state of the City of Grande Prairie's core infrastructure under the direct ownership and control of the City. The areas covered in this report include Transportation and Engineering Services (Roads, Bridges, Traffic Signals, Sidewalks and Trails), Facilities, Fleet and Parks.

This report reviews our assets and forms a picture of our asset base as a snapshot in time at the end of October 2021 which can be used to inform and guide decision-makers. Information used in this report is based on the best available data, as of October 2021, supplied by various departments/service areas.

An analysis of corporate asset data shows that the total Current Replacement Value (CRV) of all infrastructure assets is $ 1.92 Billion (B). It should be noted that this asset value does not include land holdings that the City owns. This is because land does not depreciate like other assets and, hence, does not require the same level of maintenance.

The overall condition of the City's assets is rated as Very Good to Good (Figure 1). Good condition indicates that the condition of infrastructure is satisfactory for now. Approximately 16% of the asset is rated as Fair. Assets in Fair condition are showing general signs of deterioration with some elements exhibiting significant deficiencies and require attention. The assets that are of concern to the City is the fraction of assets rated as Poor or Very Poor condition. These are the assets that are approaching the end of their useful lives. They may still be functioning but at a questionable level of service and the City needs to be prepared to respond to failures or proactively address them before they fail. For example, at some point your personal car wears out and

Figure 1 – Asset Condition – Corporate Overview



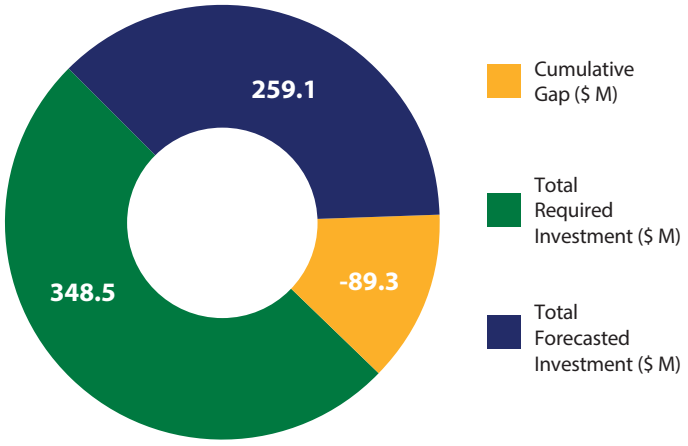
the costs to repair it far outweigh what the car is worth. Determining the best time to replace the car, before it fails, is similar to the challenges faced by asset managers as they strive to sustain delivery of quality services.

To avoid the risk of infrastructure failures that negatively affect resident's quality of life, such as road closures, facilities closures, unkempt parks, etc., it is important that the City address its growing infrastructure needs. Failure to take care of a minor repair in the short term can lead to more costly solutions in the future.

To avoid the risk of infrastructure failures that negatively affect resident's quality of life, such as road closures, facilities closures, unkempt parks, etc., it is important that the City address its growing infrastructure needs. Failure to take care of a minor repair in the short term can lead to more costly solutions in the future.

It is estimated that the City's total infrastructure needs (excluding growth and enhancement projects), funded and unfunded, over the next 10 years is approximately $348.5M. Under existing scenarios, the City forecasts the ability to fund approximately $259M during this time. The remaining $89.3M has been identified as the 10-year infrastructure funding gap (Figure 2). The City's projected life cycle investment plans will not meet the needs of our infrastructure. If nothing is done to address the projected shortfall, the infrastructure gap will continue to grow, resulting in an untenable situation. The most efficient way to manage our assets is through well planned investments, making the right investment at the right time for the right amount.

Figure 2 – Infrastructure Gap



Maturity in asset management practices and an undertaking by Council to continue investing in infrastructure would enable the City to narrow this gap. To help identify strategies to narrow the infrastructure gap, the Corporate Asset Management Office will work collaboratively with the various departments, services areas and asset owners.

Our focus will be to align condition assessments with a risk management strategy and well-defined levels of service. This integrated approach to asset management is vital in bringing about consistent asset management practices across all areas of the organization and ensures the use of assets is optimized. To continue to improve asset management within the organization, formalization of asset management planning/ plans is taking place.

This will include the following activities, amongst others:

- Establishing standard performance monitoring mechanisms;
- Adopting risk management as a core business driver;
- Defining and aligning levels of service to asset performance; and
- Developing comprehensive lifecycle management and financial plans.

Speaking the Same Language

Asset
An item that has value or potential value to an organization.

Asset Management
Set of coordinated activities and practices of an organization to realize value from its assets.

Asset Management System
The people, processes, tools and other resources involved in the delivery of Asset Management. Management system for asset management whose function is to establish the asset management policy and asset management objectives. The asset management system is a subset of asset management.

Levels of Service (LOS)
A measure of the quality, performance or output of the services provided by an asset or group of assets.

Risk
A combination of the likelihood and consequence of an unforeseen event occurring.

Appendix 1 elaborates on more common Asset Management Terminology

1.0 Introduction

Across Canada and around the world, concern has been raised regarding the sustainability of municipal infrastructure. The purpose of infrastructure is to enable the delivery of services to our citizens. The purpose of this report is to establish a good understanding of the current state of the City's $1.92 Billion worth of core infrastructure and the challenges the organization faces in order to deliver our services. Our municipal infrastructure challenges are shared by other municipalities across Canada and include increased demand for public services in a context of constrained budgets and rising costs, all while dealing with economic uncertainties. This report investigates whether the core infrastructure owned by the City is appropriately funded and whether service delivery is sustainable. This baseline snapshot of the City of Grande Prairie's assets will help our decision-makers prioritize future investments thereby improving our ability to efficiently manage our assets and deliver services.

1.1 Asset Management at the City

The City of Grande Prairie defines its assets as all physical infrastructure necessary to support social, economic and environmental services that it provides. In 2017, City Council approved an Asset Management Policy and procedures to effectively and more efficiently use and maintain these assets.

This set the stage for the City to develop an Asset Management system* and in 2020 the Corporate Asset Management Office (CAMO) was created.

This system is intended to monitor and maintain the City's assets. It is the foundation for infrastructure best practices that helps the City provide effective municipal service while balancing smart growth and quality of life. In general, the service areas and departments assess and maintain their assets and make recommendations for infrastructure growth. This work is completed with operational, strategic and governance support from the corporate asset management team and forms the basis of the City's Asset Management System.

The asset management system is underscored by a process of continuous improvement based on the cycle of plan, do, check and act. The following three items are an important part of this cycle:

1. State of Infrastructure Report (SOIR) – A corporate level document which includes business unit data. It reports on the overall state of City assets.
2. Corporate Asset Management Plan (CAMP) – A corporate plan which will comprise individual business unit asset management plans and serves as an action plan for the improvement of the City's Asset Management System (including practices, technology, people and business processes).
3. Monitoring State of Asset Management or Asset Management Maturity – This is measured within the City's Asset Management Plan.

1.2 Role of the State of Infrastructure Report

This report is a key component of our organization's asset management system and will serve as a guide for City Council to make informed infrastructure investment decisions. This document helps the City understand the needs and performance of its infrastructure in support of the development of 2022–2026 service plans and budgets.

We recognize the need to apply sound decision-making processes that are founded on robust data. This document seeks to build on these aspirations. It highlights the status of the City's assets and provides an indication of its organizational capacity to deliver on strategic outcomes. The infrastructure status is presented at an asset portfolio level, rolling up information and data from individual assets. This information provides an overall assessment of our assets and highlights how well these assets are achieving their strategic objectives. It consequently supports asset stewards to develop infrastructure investment priorities.

1.3 Report Overview

This preliminary SOIR is a key building block for the City's future management of its infrastructure assets. The report is intended to provide the following information:

- Details of the Asset Inventory – What do we own?
- Valuation of the Asset Base (Replacement Value) – What is it worth?
- Condition / Performance of the Asset Base – What Condition is it in?
- Investment Profile – What do we spend and what should we be spending?
- Problem Identification – What is the gap and how do we address it?

This report is a companion document to the first City of Grande Prairie Corporate Asset Management Plan. The Plan is intended to set the stage for resolving the issues identified by this SOIR thereby aiding the City on its journey towards implementing universally accepted asset management practices. This SOIR lays the foundation for ongoing assessment and benchmarking and allows the City to communicate publicly on the current state of the City's infrastructure. In this first issue of the report, focus is on the "Core infrastructure", described generally as the infrastructure owned and internally managed by the City that delivers essential services directly to residents. Future iterations of this report will look to include all assets directly and indirectly owned or managed by the City, including internal support services such as Information Technology as well as other asset group types such as parking lots and signs, etc..

1.4 Methodology

Although there are many commonalities across departments and service areas, in terms of how they manage their assets and record asset data and transactions, there are also many differences. To complete the SOIR in a consistent manner, the following methodology was adopted:

- The largest departments (that comprise over 90 per cent of the City's asset value) were contacted to provide their asset data. Appendix 2 details the various sources used to collect data.
- Corporate Asset Management Office (CAMO) acted in a supporting and co-ordinating role to collect and structure asset data from the departments and asset owners in a manner that enabled standardized reporting. Departments and asset owners also provided regular feedback, clarifications, and responses to any identified concerns or questions.
- CAMO collected the responses, consolidated the data, conducted analyses, compiled the report and made recommendations for next steps.

1.5 Data Quality

This report represents the accumulation of best available data prior to the implementation of the Corporate Asset Management Program. At the current time, asset management practices throughout the City vary greatly in terms of their maturity. Due to the variety of practices surrounding management of the City's infrastructure and the data quality that supports these management efforts, the findings of this report are not immune to limitations. Much of the data accumulated to produce this report is based upon reasonable, acceptably documented, procedures and the City's major data repositories in Maintenance Connection, Road Matrix, Fleet Management System and GIS. Data was also collected from Tangible Capital Asset (TCA) and data included in the 2020 financial statements. Where data was not available, expert opinion of City staff was used primarily in the production of condition ratings but also to some extent in the inventories presented.

Although the City generally has good information on its asset inventory, this report uses estimates and assumptions where necessary particularly regarding condition information and should move to a risk-based approach over time to improve data confidence.

For this "State of Infrastructure Report", the following condition assessments methodologies were implemented:

- Roads – Pavement Quality Index (PQI)
- Bridges – Bridge Condition Index (BCI)
- Traffic Signals – Age
- Sidewalks – Sidewalk Condition Index (SCI)
- Trails – Trails Condition Index (TCI)
- Storm-Systems – Age
- Facilities – Building Condition Index (FCI) and Age
- Fleet – Age
- Parks – Age and Expert Opinion

2.0 Report Findings Corporate Level Overview

This report presents the inventory of the City's assets, their replacement value, their condition, and the projected funding needed to replace them as they deteriorate.

2 .1 What Do We Own – Asset Inventory

In a broad sense, the City's core asset base is comprised of four major asset categories:

Transportation and Engineering – A broad portfolio of assets including roads, bridges, sidewalks and trails and associated assets, culverts, storm water network and treatment and associated assets.

Facilities – All buildings including, fire halls, recreation centres, arts and culture and corporate facilities.

Parks and Recreation – Includes parks, trees, playgrounds and sports pitches, as well other land improvements.

Fleet – Includes all buses as well as trucks and other vehicles/equipment to support all business unit operations.

Table 1 – City of Grande Prairie's Infrastructure at a Glance

Category	Group Type	Asset Type	Inventory	Unit
Transportation & Engineering		Local	195	CL-KM
		Collector	120	CL-KM
		Arterial	84	CL-KM
		Primary Highway Connectors	51	CL-KM
		Laneways	53	CL-KM
		Unclassified	40	CL-KM
		Vehicle	10	Ea.
		Culvert	10	Ea.
		Pedestrian Signal	13	Ea.
		Sign	6	Ea.
		Intersection	84	Ea.
		Median flashers	5	Ea.
		Rapid Flashing Beacons	7	Ea.
		Pedestrian Signals	10	Ea.
		Advanced Warning Flasher	10	Ea.
		Emergency Light at Firehalls	3	Ea.
		Sidewalk	335	KM
		Trail	111	KM
		Stormpipe (includes catchbasin leads)	244	KM
		Stormwater Management Facilities	43	Ea.
		Manholes	2,940	Ea.
		Catchbasin Manholes	1,940	Ea.
		Catchbasins	2,470	Ea.
Facilities			59	Ea.
Fleet		Automobile	28	Ea.
		Light Truck and Van	83	Ea.
		Heavy Truck	28	Ea.
		Passenger Bus	33	Ea.
		Attachment	63	Ea.
		Equipment	106	Ea.
		Heavy Equipment	76	Ea.
		Trailer	23	Ea.
Parks		Playgrounds / Play Structures	106	Ea.
		Outdoor Structures	Misc	Ea.
		Trees	23,740	Ea.

2.2 What is it Worth – Asset Valuation

Current Replacement Values (CRV's) are used as the basis to estimate the cost of replacing an asset when it reaches the end of its engineered design life. The total replacement cost of all assets covered within this SOIR is estimated at $1.92B.

The City uses various methods to estimate replacement costs needed for infrastructure renewal planning:

- Local price indices – This is the most accurate method. The City has collected recent acquisition data demonstrating similar replacement activities.
- Published price indices – Where local indices are not available, the City uses published standardized indices.
- Purchasing estimates – When assets cannot be estimated against either index, the City uses historic cost, asset age and inflationary effects to determine the CRV.
- Third party information – Insurance valuations and third parties condition reports provide a basis for CRV.

The total replacement value of all assets covered under this report is illustrated by asset category in Figure 3 below.

Roads (35.5%) make up approximately one-third of the City's total asset base, with Facilities (21.6 %) and Storm Systems (21.4 %) each making up about one-fifth. The asset values are reflective of the size of the asset base of each Asset Category/ Group Type and do not represent the actual value of the services provided to the citizens, which are all important.

2.3 What Condition is it in?

The condition of each asset category was evaluated to represent the current 'health' of the City's infrastructure. A five-point rating scale (Table 2) was used to align to widely used and accepted condition rankings.

In addition to providing a sound basis for assessment, this will allow us to benchmark the results against the values presented in this document. Ratings range from 1 to 5, as described in Table 2, reflecting each asset group's physical condition.

Figure 3 – Asset Current Replacement Value

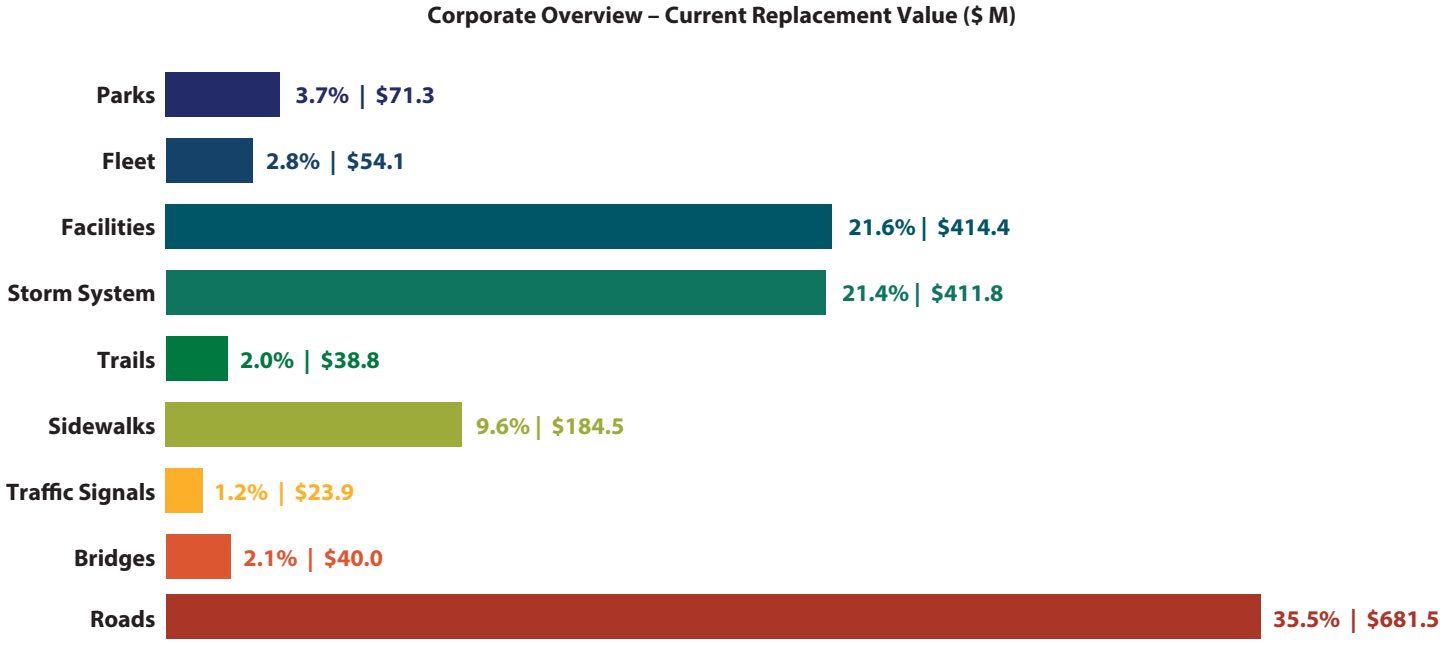


Table 2 – Condition Rating Scale		
Rank	**Condition**	**Definition**
1	Very Good	The infrastructure in the system is in generally good condition, typically new or recently rehabilitated. Minimal elements show signs of deterioration that require attention.
2	Good	The infrastructure in the system is in good condition; some elements show signs of deterioration that require attention. A few elements show sign of significant deficiencies.
3	Fair	The infrastructure in the system or network is in fair condition; it shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies.
4	Poor	The infrastructure in the system or network is in poor condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration.
5	Very Poor	The infrastructure in the system or network is in unacceptable condition with widespread signs of advanced deterioration. Many components in the system exhibit signs of imminent failure, which is affecting service.

The City should continuously improve its assets condition assessment protocols to bring them in line with industry best practices to better reflect reliability and adequacy of the assets to provide service.

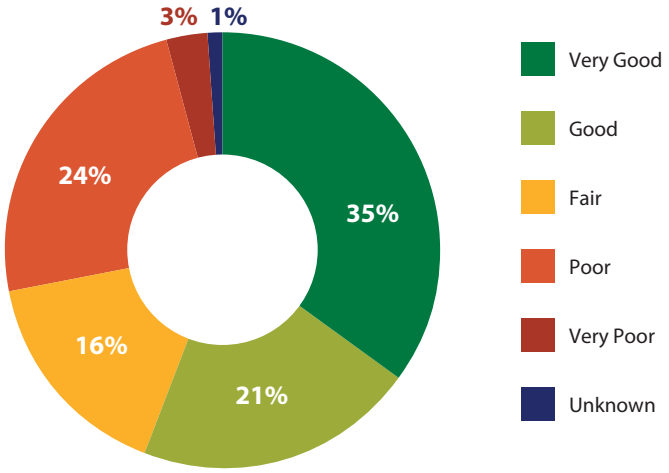
This report uses a combination of methods to determine the asset conditions presented. Some assets undergo routine formal condition assessments. However, for a large part of the asset base, condition information is based on the age and expected useful life of the asset. Appendix 3 details the three methods used to determine asset condition.

Roughly 56% of the City's core infrastructure value is rated in Good to Very Good condition (figure 4), fully functional and well placed to support service delivery into the future. However, approximately 27% of the City's core infrastructure is rated Poor to Very Poor indicating that some assets are showing general signs of deterioration and require attention. Some assets are exhibiting significant deficiencies that require more immediate intervention. It is to note that roughly 8% of the asset base (trees and stormwater management facilities are not assessed for condition) and have not been included while considering for overall condition assessment.

The asset condition, at the end of October 2021, for each asset category inventoried is reflected in figure 5.

Illustrated in Figure 5, Transportation and Engineering

Figure 4 – Asset Condition – Corporate Overview



Services (Roads, Bridges, Traffic, Sidewalks/Trails and Storm systems) are overall in Good condition. Facilities assets are generally in very good condition while some 53% of Fleet assets are rated Good to Very Good.

The bands of red and yellow reflect the areas of greatest need. For example, at the end of 2021, 38% of Roads assets were evaluated as being in Poor to Very Poor condition. This reflects an area in need of investment. Roads are still open but risks are higher that Poor road conditions will lead to increased potholes, vehicle damage, slower speeds, longer commute times, greater gas consumption, etc.

Figure 5 – Asset Condition – Asset Category Overview

Asset Category	Asset Value	Condition Grade
Roads	$681 Million	13.5% 29.4% 18.9% 37.4% 0.7%
Bridges	$40 Million	12.5% 16.3% 66.3% 5.0%
Traffic Signals	$24 Million	15.1% 28.3% 10.3% 12.8% 20.5% 13.0%
Sidewalks	$185 Million	25.4% 48.7% 16.6% 6.1% 3.2%
Trails	$39 Million	30.9% 37.1% 12.2% 8.0% 11.8%
Storm Systems	$412 Million	34.0% 10.5% 13.9% 32.9% 4.1% 4.6%
Facilities	$414 Million	77.9% 1.8% 8.2% 11.0% 1.1%
Fleet	$54 Million	30.4% 22.9% 14.4% 11.7% 20.6%
Parks & Trees	$71 Million	18.5% 50.6% 17.1% 11.3% 2.5%
	$1,920 Million	

2.4 What Do We Plan to Spend Versus What We Need to Spend?

The City of Grande Prairie currently invests in the renewal of its infrastructure through capital and renewal budget projects. This report measures the difference between what we plan to invest through the budget process and what we need to invest in order to sustain the services delivered using infrastructure – the Infrastructure Gap.

The infrastructure gap represents the amount of investment that would be required to address the risk represented by assets nearing the end of their estimated useful lives and to address deteriorating asset conditions. These needs do not include allowances for growth, inflation or service improvements. Growth impacts are intended to be addressed by the operating principle that 'growth pays for growth'. Improvements and inflation are expected to be addressed by future rate changes.

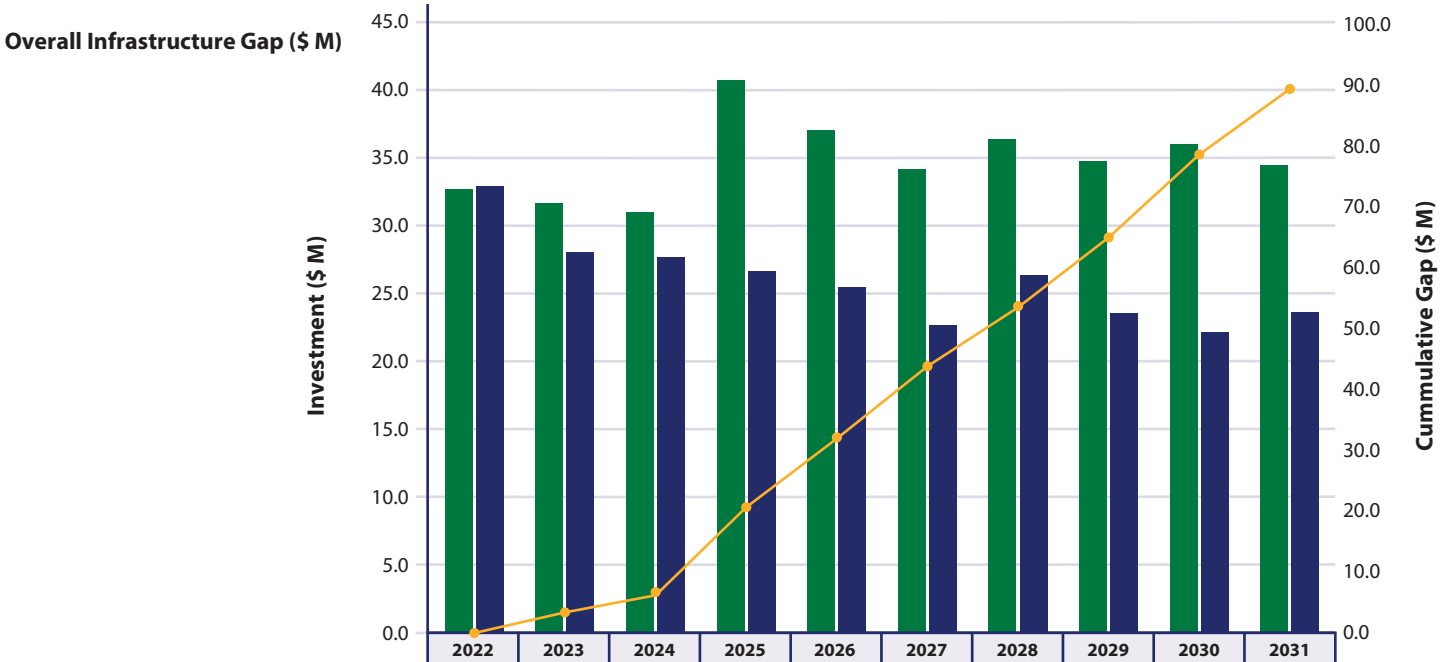
The forecasted capital plan shows planned investments of $32.7M in 2022. These expenditures are to the same level as the estimated requirements.

Based on current funding plans and service levels, the infrastructure gap is projected to grow steadily over the next 10 years. Over this decade the City projects spending approximately $259.1M (forecasted Investment) to address the life cycle needs of its core assets. This forecasted level of investment will result in an infrastructure investment gap of roughly $89.3M (Cumulative Gap) over the next 10 years (Figure 6).

As our infrastructure is aging and continues to need renewal and replacement as it nears the end of its useful life, we face the challenge to find ways to control growth of the infrastructure gap.

The City has undertaken many activities in the past including adapting reserve funds (fleet and facilities), tapping into provincial and federal funding opportunities and reviewing levels of service to maintain financial stability and keep the infrastructure gap under control. The Corporate Asset Management Office along with internal stakeholders will implement new strategies to find ways to further mitigate the growth of the infrastructure gap.

Figure 6 – Infrastructure Gap



	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Total Required Investment ($ M)	32.7	31.7	30.9	40.6	37.0	34.1	36.4	34.7	36.0	34.4
Total Forecasted Investment ($ M)	32.9	28.0	27.7	26.6	25.4	22.7	26.4	23.6	22.2	23.6
Cumulative Gap ($ M)	0.2	3.4	6.6	20.6	32.2	43.7	53.7	64.8	78.6	89.3

3.0 Report Findings – Asset Category Overview

3.1 Transportation & Engineering Services

The City of Grande Prairie operates and maintains roadways, bridges and sidewalk/trails infrastructure thus enabling safe and effective travel. The importance of efficient transportation is essential to building a strong economy and improving the quality of life for our citizens. The City contributes to the local economy and quality of life by supporting the safe and efficient movement of people and goods using transportation infrastructure while managing the growing cost of transportation. Good roads and structures promote business, create employment, provide social opportunities, create markets, and save lives. When transportation infrastructure is deficient, congestion escalates, the frequency of accidents increases, wear and tear on vehicles worsens, emergency response deteriorates, the environment is negatively impacted, business suffers, and opportunities are lost.

Storm systems are also part of this grouping of asset categories as the City ensures management and treatment of Stormwater and draining to protect its residents as well as the natural and built environments. The City's transportation and engineering departments collaboratively plan for and maintain this critical infrastructure.

The total replacement value of the City's Transportation and Engineering services infrastructure is approximately $1.38B a representation of nearly 72% of the City's entire $1.92B asset portfolio.

Overall, the City's Transportation services assets are in Good condition with around 32% of the total asset base being rated in Poor to Very Poor condition (Figure 7).

Of this, the City's roadway network represents the largest component of these services, representing approximately 49%, or $681M of the total value within Transportation and Engineering services asset base. Figure 8 paints a picture of condition of each asset category within this group. Each asset category within the Transportation and Engineering Services area will be detailed in the few sections that follow.

Figure 7 – Transportation and Engineering Assets Current Overall Condition

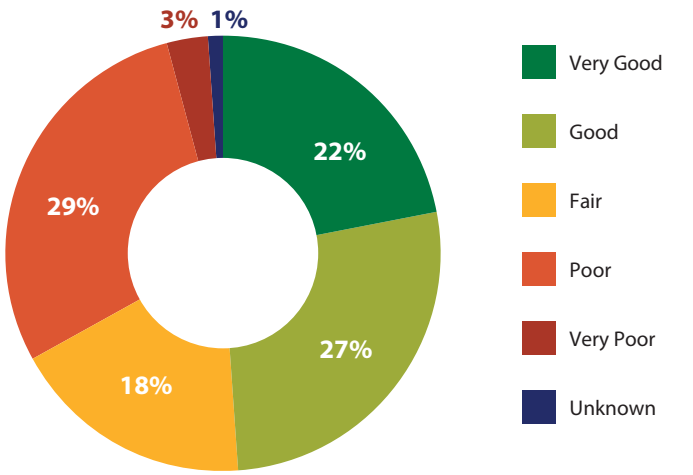


Figure 8 – Transportation and Engineering Assets Current Replacement Value and Condition

Asset Category	Asset Value	Condition Grade
Roads	$681 Million	13.5% 29.4% 18.9% 37.4% 0.7%
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Storm Systems	$412 Million	34.0% 10.5% 13.9% 32.9% 4.1% 4.6%
	$1,381 Million	

3.1.1 Major Types of Services within Transportation & Engineering

3.1.1 Roads

The City's road network is intended to accommodate pedestrians, cyclists, transit, motorists, and the movement of goods. It consists of local, arterial. collector and primary highway connector roads.

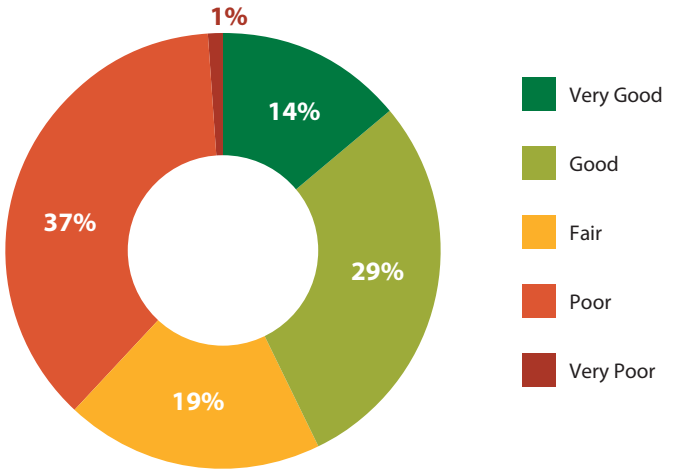
The condition of our roads is evaluated on a regular basis using varying condition assessment techniques. Paved Roads are assessed on a 3-year cycle and results are analyzed and used to establish the pavement quality for each road segment in the City measured against road criteria known as the Pavement Quality Index (PQI). The current network level of service has average PQI values greater than the minimum acceptable levels for all functional classes.

Road sections that are at an optimal time for specific rehabilitation treatments are placed on a list for rehabilitation. The highest priority roads are rehabilitated dependent on budget availability. The roads that are not repaired join the list for future budgets. Staff and public observations also result in spot repairs as needed, i.e. potholes. 43% of the roads assets are in Good to Very Good condition. Present needs analysis of the City's network indicates that 38% of the network is in Poor to Very Poor condition and in need of near term rehabilitation.

Table 3 – Roads Inventory & Current Replacement Value

Roads Functional Class	Length (KM)	Current Replacement Value ($M)
Arterial	76.7	191.8
Collector	73.0	102.2
Local	258.0	335.4
Primary Hwy Connector	20.8	52.0
Total	**428.6**	**681.5**

Figure 9 – Roads Asset Condition



3.1.1 Major Types of Services within Transportation & Engineering

3.1.2 Bridges

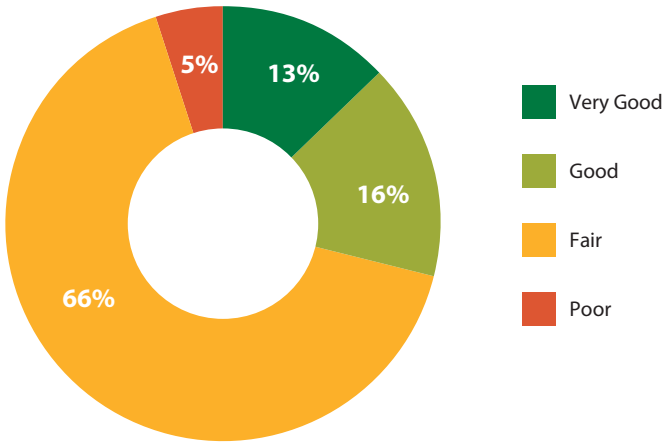
City owned Bridges and Culverts are managed to Alberta Transportation Standards. Assets are inspected using the Alberta's Bridge Rating System on a rotating basis to identify structural issues and concerns. Table 4 breaks the bridges down into their different categories (traffic, culvert, pedestrian) with their respective inventories and valuations.

Deficiencies are noted and combined with other service requirements in planning corrective action. Two thirds of City bridges are in Fair condition, indicating that most current structures are operational and do not have urgent deficiencies, but will require rehabilitation in the medium term. Any bridge in Poor condition (5% of the total) is at risk of not meeting service levels and is prioritized for some type of attention over the short to mid-term. One such bridge is scheduled for replacement in 2022.

Table 4 – Bridges Inventory & Current Replacement Value

Row Labels	Qty	Current Replacement Value ($M)
Culvert	10	5.0
Pedestrian	13	11.0
Traffic	10	24.0
Total	**34**	**40.0**

Figure 10 – Bridges Asset Condition



3.1.3 Traffic

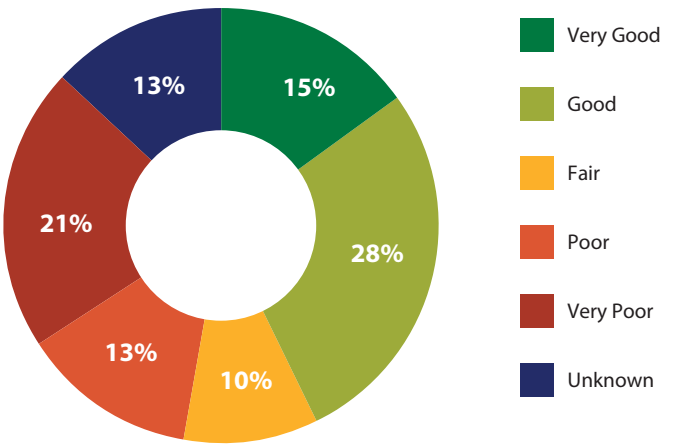
Traffic assets are used to support reliable, efficient, and safe transportation through pedestrian/vehicular traffic control signals and signage. An inventory for signage is not available at the time of writing this report. The City maintains an inventory of traffic signals by intersection type. Table 5 depicts traffic signals assets to reflect current inventory and valuation.

The City retains consultants to perform regular inspections of its signals (on a 7-yr cycle). These inspections assist in identifying repairs and replacements, but do not identify specific condition scores. Therefore, the following condition profile is based on age converted to the 5-point scale. Install dates are not available in the dataset for 13% of the inventory and are shown as unknown in the condition profile.

Table 5 – Traffic Signals Inventory & Current Replacement Value

Signal Type	# of Intersections	# of Poles	Current Replacement Value ($)
Intersection	84	415	22,441,125
Median Flashers	5	5	55,000
Rapid Flashing Beacons	7	15	90,000
Pedestrian Signals	10	21	800,100
Advanced Warning Flasher	10	10	301,500
Emergency Light at Firehalls	3	6	189,900
		Total	23,877,625

Figure 11 – Traffic Signals Asset Condition



3.1.4 Sidewalks & Trails

City Sidewalks and Trails are managed proactively to address trip hazards and safety concerns. Full inventory and valuation are as per table 6.

The condition of our Sidewalks and trails is evaluated on a regular basis using varying condition assessment techniques. Assessment is carried out on a 3-year cycle and results are analyzed and used to establish the Sidewalks and Trails quality for each road segment in the City measured against Sidewalks and Trails criteria known as the Sidewalks Condition Index (SCI) and Trails Condition Index (TCI). Known issues are prioritized and addressed reactively through operations or capital projects while all those having major issues are scheduled for immediate repair.

Sidewalks are also evaluated and renewed as part of neighbourhood renewal and redevelopment activities, where replacement of assets is coordinated with other construction works.

Sidewalks are primarily in Very good to Good condition (77%) indicating that they are free of trip hazards and major damage. The small fraction in Poor to Very Poor is prioritized for rehabilitation or replacement.

68% of the City's trails' network has been assessed to be in Good to Very Good condition while 20% are showing some signs of deterioration and in need of immediate attention.

Table 6 – Sidewalks & Trails Inventory & Current Replacement Value

Asset Group Type	Length (KM)	Current Replacement Value ($M)
Sidewalks	335	184.5
Trails	111	38.8
Total	**433**	**223.3**

Figure 12 – Sidewalks Asset Condition

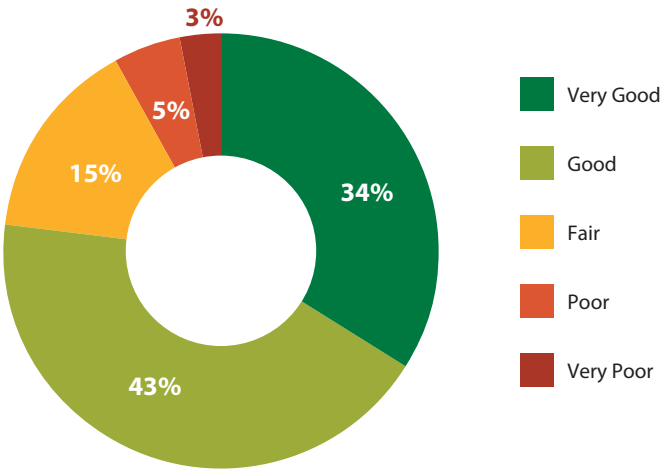
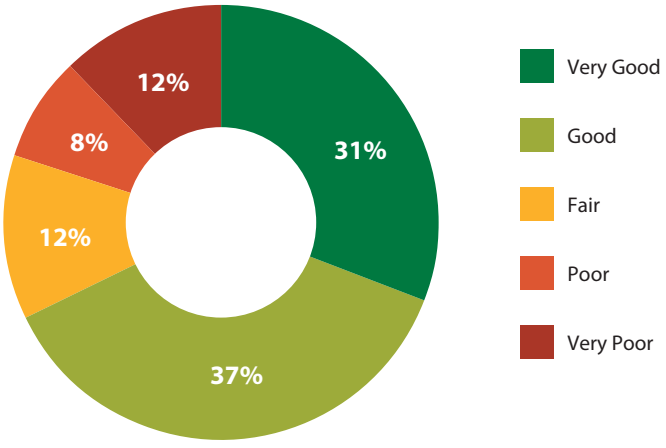


Figure 13 – Trails Asset Condition



3.1.5 Stormwater

The City protects its citizens and the natural and built environments through the management and treatment of stormwater and drainage. The City's stormwater system aids in preventing flooding by draining rainwater away from buildings and roads and controlling the rate of discharge to rivers and streams. The majority of the run-off water from areas developed in recent decades is treated to help remove sediment and pollutants before it outlets to the natural environment. The Transportation and Engineering departments are responsible for the planning, design, and maintenance of the City's stormwater system.

An extensive network of infrastructure and equipment is operated and maintained by the City to manage stormwater.

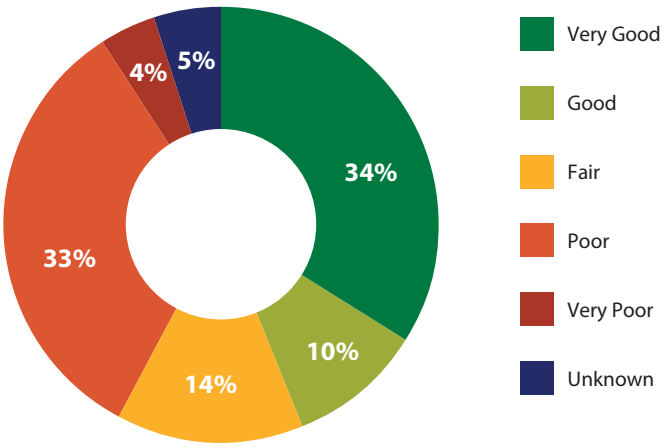
Of the stormwater infrastructure valued at approximately $414M, about 70% of this total is related to the City's storm sewer system with the remaining value largely associated with stormwater management facilities. A summary of the inventory and valuation of the different asset groups under this asset category is provided in table 7.

The City has been doing CCTV inspections on the storm lines to evaluate condition since 2011. At the time of the report only 58% of the system had been inspected, therefore age and pipe material were used as the basis. Nearly 45% of the City 's stormwater assets are in Good to Very Good condition with the remaining assets in Fair or Poor condition. Stormwater Management Facilities valued at approximately $120M are assessed for maintenance requirements, but condition ratings are not assigned as replacement of such asset type is not very common.

Table 7 – Stormwater Inventory & Current Replacement Value

Asset Group Type	Length (KM) or Qty	Current Replacement Value ($M)
Storm Pipe	243 KM	222.9
Culvert	4 KM	2.9
Stormwater Management Facilities	185	119.3
Manholes / Catch Basins / Catch Basins Manholes	7,354	68.8
Outfalls	99	3.0
	Total	**413.9**

Figure 14 – Storm Water Conveyance & Outfalls Assets Condition



3.2 Facilities

The City owns and operates 53 facilities. These facilities are used to provide the wide range of services offered by Grande Prairie. They support service delivery by providing safe and efficient work and meeting places for use by City staff, Council, Boards and Commissions, and members of the public. The Corporate Facility Department manages and maintains those facilities assets, allowing them to meet the City's functional requirements, and building and safety codes, while operating in a safe and efficient manner.

The City also owns facilities it does not actively manage such as affordable housing units, social projects related properties, and others such as airport buildings. These are included as part of the valuation and condition assessment of this category of asset.

Valued at nearly $414M, City owned facilities account for one fifth of the overall asset base. Condition assessment of 25 facilities (accounting for approximately 90% of the total Current Replacement Value of the facilities portfolio) in this SOIR is based on the City's 2020 Facility Condition Assessment study. This study established an industry-standard Facility Condition Index (FCI) that reflects the overall condition of the facilities (building envelope electrical and mechanical systems etc.). Current age and Expected Useful Life were used to determine condition for the remainder of the portfolio.

Approximately 12% of the Corporate Facility assets were in Poor to Very Poor condition indicating significant investment will be required to maintain the safety and functionality of these facilities over the next decade.

3.3 Fleet

Fleet vehicles and equipment are managed by the Fleet Department. A safe, reliable, and right sized municipal fleet is a key aspect to service delivery for all other municipal departments to provide their services to City residents.

The department manages over 450 vehicle and equipment assets that range significantly in both complexity and value. Rolling stock assets include both on-road and off-road vehicles and equipment such as graders, backhoes, riding mowers etc... down to over 100 light passenger vehicles like cars, vans, SUV's and pick-up trucks and 33 Transit buses.

The remaining assets are a mix of both rolling stock and non-rolling stock that include a range of equipment including turf mowers, trailers, sanders, tractors, and gas-powered tools and equipment.

Assets are maintained in safe, serviceable condition, with replacement occurring on a planned basis as assets reach their optimum lifecycle stage or their optimum economic resale time. Retired assets are sold off and the associated proceeds used to offset the purchase of new ones if and when required.

Figure 16 presents the condition distribution of all the vehicles and equipment assets owned by the City. It shows that 67% of the assets are in Very Good to Fair condition . Condition information for Fleet assets is based on the age and expected useful life. Sound maintenance practices allow Fleet services to extend the lives of these assets and maintain their serviceability throughout their lifecycle and extend use of the assets beyond its Expected Useful Life. The City continuously updates its Fleet assets to take advantage of hybrid and emerging technologies.

3.4 Parks

The City's park infrastructure contributes to the environmental and social health of the City. By investing in neighbourhoods, the City helps support families and build community capacity.

Valued at $71M, not including land, Parks' assets include a collection of outdoor structures - sport fields such as basketball courts, baseball diamonds, tracks, tennis courts etc... – children's playgrounds, manicured public gardens and trees. This category of asset is managed, operated, and maintained by the City's Parks department.

Parks crews regularly inspect children's playgrounds to identify defects and repair needs to comply with legislations. The condition profile for playgrounds has been calculated using a combination of age and expert opinion. As for outdoor structures, condition profile for this group has been noted based on expert opinion only since construction year data and condition assessments reports are currently unavailable.

While 69% of the City's playgrounds are rated Good to Very Good a smaller 14% is rated Poor to Very Poor. Assets in these latter conditions include playgrounds (12), basketball courts (2), outdoor rinks (2), volleyball court (1) and baseball diamonds (5) indicating that while they are functional, many are showing some signs of aging and deterioration and will need upgrades and renewals soon.

Inventoried trees maintained in parks, boulevards, and along major roadways are valued at approximately $42 million. Unlike our other assets, trees are living and likely increase in value with age for most of their lifecycle. The condition of a tree relates primarily to its health unlike other assets which focus on wear and tear and age. This report does not account for trees condition.

Figure 15 – Facilities Assets Condition

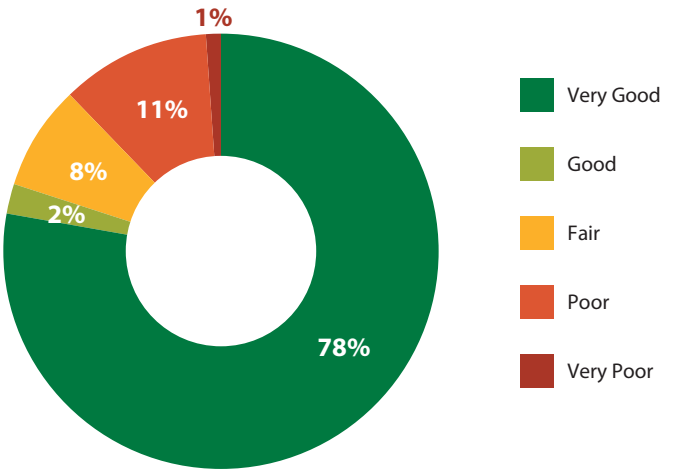


Figure 16 – Fleet Assets Condition

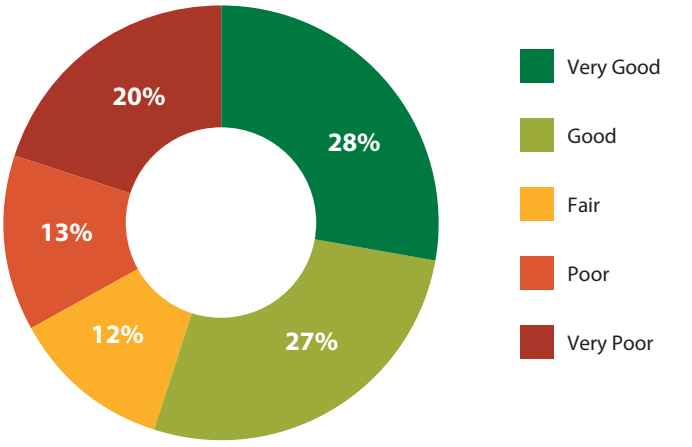
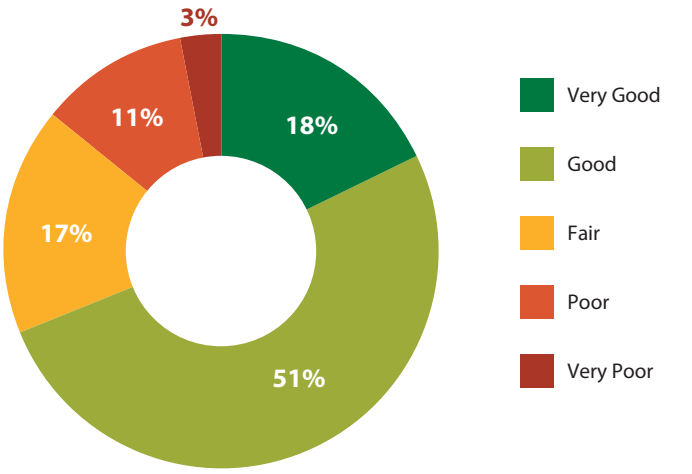


Figure 17 – Parks Assets Condition



4.0 Infrastructure Gap

The combination of each department's spending plans and needs over the next ten years was used to calculate the City's infrastructure deficit. Total capital investment needs for each department were based on a 10-year horizon and included only renewal capital projects (growths and enhancement capital projects were not included). The gap between total capital investment requirements and estimated future capital funding resulted in an approximately $89.3M deficit over the next decade.

The concern over an infrastructure gap is not so much that it exists. In fact, maintaining a controlled "gap" is likely indicative of prudent financial management. A balance must exist between the amount of preventative and reactive measures used to address infrastructure concerns and how much risk of asset failure is tolerable.

The City has identified funding sources for required investments for year 2022 circumventing any gap. However, starting 2023, as shown in Figure 18, the planned investment levels fall short of the required investments.

Projected growth of the infrastructure gap is the concern that must be addressed. Reserve fund levels – Fleet Renewal, Facilities Renewal and Future Expenditure - have been reviewed over the last couple of years to better mitigate the gap. However, it should be clear that current balances are not sufficient to fund all life cycle projects required in the next ten years.

Figure 19 summarizes the infrastructure gaps per asset category/group type in a way that helps put future plans in context. The City can reduce both the current and projected infrastructure gaps by focusing efforts on those areas that contribute the largest portions of the projected 10-year infrastructure gap.

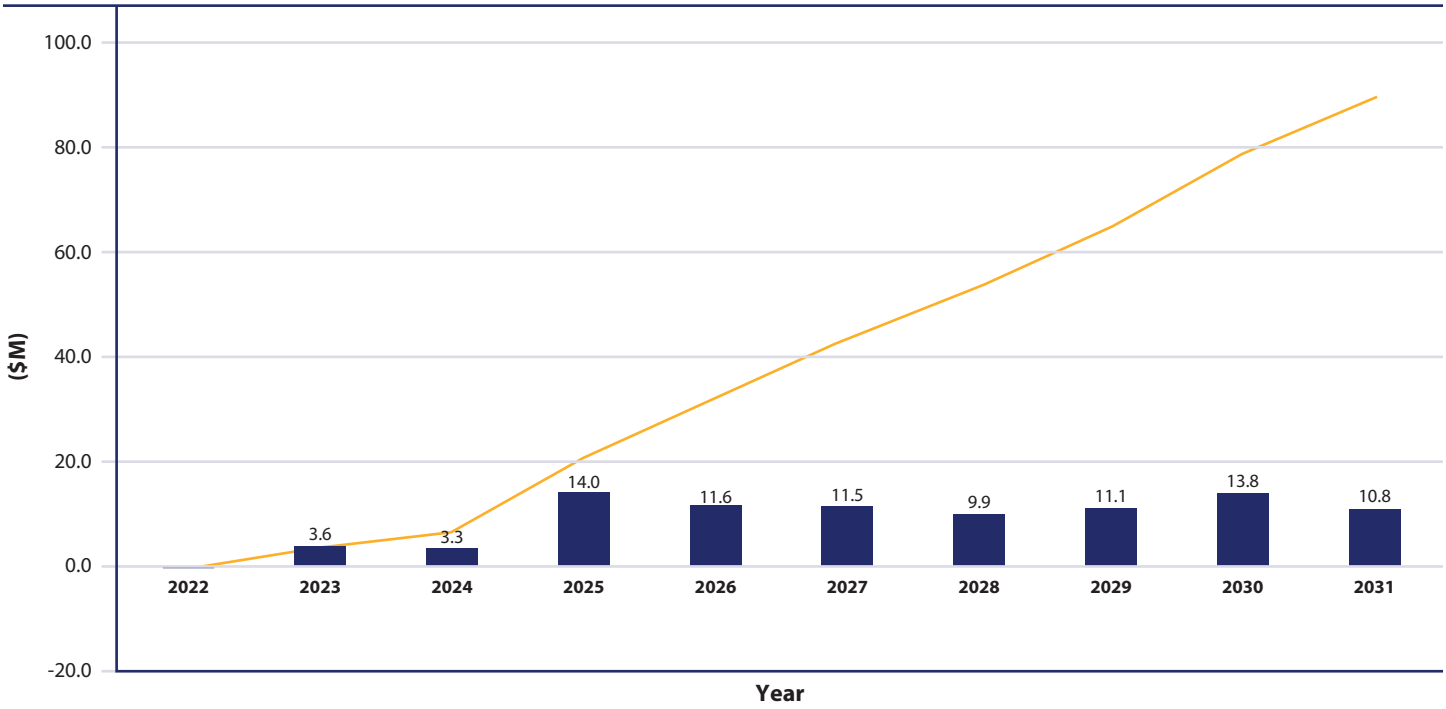
The information in figure19 shows that the largest 10-yr infrastructure gap amount ($53.0M) is associated with Roads – which also has the highest replacement value. However, the results are not intended to suggest asset group types/ categories with higher replacement values should have their needs prioritized over the needs of any other group type/category. Rather, the City should maintain all its assets in a condition that supports service delivery. For example, Facilities and Parks have lower total replacement values and infrastructure gaps compared to Roads. This does not reflect the importance of either of these asset categories to the City as a whole. They all dispense services that have critical elements. Furthermore, they are connected in the system where failure of either, might impact all services delivered by the City. For example, a sink hole has the potential to affect road, stormwater, traffic, access to facilities and parks etc. Deterioration of any of the assets within the City's asset network has potential to affect the performance of other assets and ultimately the services delivered.

If taxation and user fees were the only source of funding, eliminating the infrastructure gap would require each Grande Prairie household to contribute an additional $3,340 over 10 years to address the $89.3M infrastructure gap.

The City has a long-standing practice of pursuing all possible means to achieve our service delivery goals and has been reasonably successful delivering quality services when compared to other municipalities. However, this might be insufficient to fully contain the growth of the infrastructure gap. Continued effort and evolution of our asset management practices are required.

The City receives its funding through taxes, user fees, transfer funding from upper tier governments and debt. Funding sources are limited, and the City needs to manage its services within its means. The infrastructure gap needs to be addressed in an affordable well-planned fashion and not simply be deferred onto future generations.

Figure 18 – Yearly Infrastructure Gap and 10-yr Cumulative Infrastructure Gap



Choices are available as to how the City can manage the infrastructure gap. The City can continue to deliver services at their existing levels by committing to make required investments thereby stabilizing or even eliminating the infrastructure gap.

However, paying for the gap is not the only opportunity. The City can reduce levels of service to match its ability to pay. This is the realization that you get what you pay for. Generally, there is an unwillingness to give up services currently enjoyed and a strong desire to improve services. There is also recognition that some services are essential and cannot be eliminated.

Another opportunity for the City is to find more efficient and effective ways of delivering services, including changing the asset mix that supports service delivery to the community. The City strongly supports this direction and regularly invests in growth, improvements, and enhancements projects.

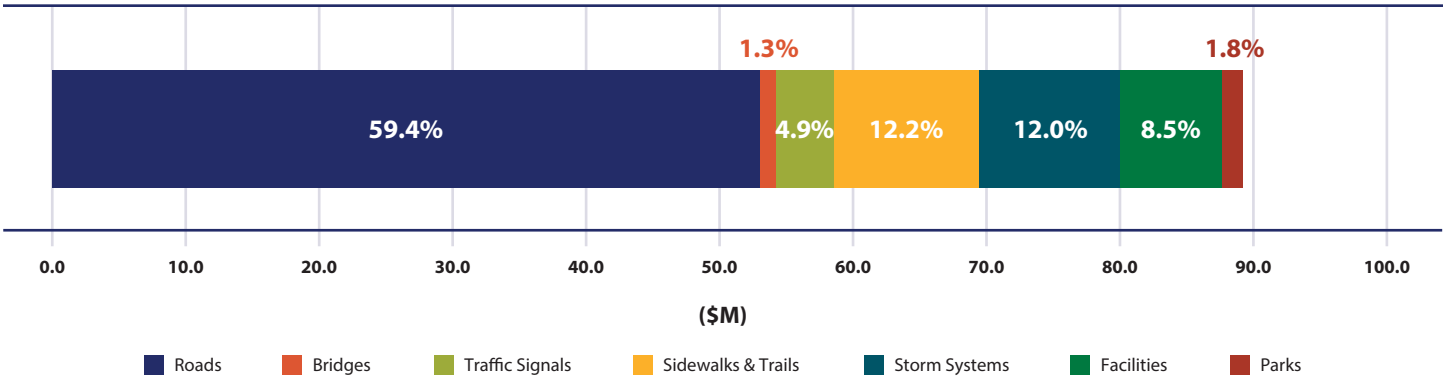
Other strategies could include:

- **Increasing Access to Revenue:** Increases to existing revenues, exploring access to new revenues, and leveraging maximum dollars from federal and provincial capital funding.
- **Reassess Levels of Service:** Innovative approaches to maintaining or enhancing existing levels of service, as well as challenging decision-making in cases where reductions to service levels are warranted.
- **Review Assets in Poor to Very Poor Condition:** Ensure critical infrastructure continues to receive adequate funding to address Poor to Very Poor condition and mitigate against assets deteriorating to this condition.
- **Better Alignment Between the Budget Process and Asset Management:** The asset management program and budget process operate as a system that offer the greatest benefit if processes between each are fully integrated. Ongoing alignments between the asset management program and the budget process will allow for improved decision making related to capital infrastructure requirements and associated operational budget impacts through the implementation of short-term and near-term actions.

The Capital Plan identifies the various sources for funding the capital expenditures, including capital tax, reserves and grants. The City will need to continue to make efficient use of available funding, while also balancing the priorities between new, upgraded and existing assets during the Capital Planning process.

There are no easy solutions to how the entire system works together to achieve an optimal delivery of services. Additional efforts are required to address the infrastructure gaps beyond what is currently planned. These efforts could include additional funding, level of service changes, etc. The City is developing a Corporate Asset Management program that is making progress towards optimizing asset management practises in Grande Prairie. As part of the Corporate Asset Management program a companion document to this State of Infrastructure Report, the Corporate Asset Management Plan will be drafted. This document will guide efforts of the City to address the needs of our infrastructure.

Figure 19 – Figure 19: Contributors to Infrastructure Gap



5.0 Summary

This report is the first collective asset review for the City and provides a snapshot of our current infrastructure inventory and informs and guides the decision makers as they plan for the next four years' business cycle. Information used in this report is based on the best available data, as of October 30, 2021, supplied by various departments/asset owners.

The total replacement value of all assets covered under this report is $1.92B. Of the $1.92B, transportation services represent the largest share at 72%, or $1.38B of the total value.

Asset condition is a useful indicator of the extent of asset deterioration and remaining life of the asset. Assets in poor condition are more likely to be unreliable, leading to asset failures and potentially service failures. Asset condition is, therefore, critical information for the City to understand to support the timing of possible interventions to improve or maintain the levels of service at a desired standard.

Overall, a high proportion (about 56% or $1.1B) of City assets are in Good to Very Good condition. A smaller fraction of around 27% ($518M) of infrastructure is in Poor to Very Poor condition.

Over the next 10 years, it is estimated the City's total infrastructure need, funded and unfunded, is approximately $348.5M. As the City anticipates the ability to fund approximately $259.1M during this time, it has been identified that the total 10-year infrastructure gap is approximately $89.3M.

The findings of this report are based on best available information. The City is taking steps to improve its approach to asset management through the implementation of a Corporate Asset Management Program. This will support the City's processes and best direct resources for the City to collect data particularly with respect to asset condition and information compilation.

6.0 Monitoring, Recommendations & Potential Improvement Opportunities

6.1 Overview

This first version of the SOIR will not meet all the long-term goals of a fully developed AM Plan due to gaps in data, information and business processes. It is intended that the continual improvement of asset management practices and associated data collection by the City will result in regular updates to this document. As such, this SOIR is a living document that will require ongoing refinement to reflect the improvement of asset management maturity within the City over time.

This snapshot in time clearly illustrates the challenges facing the City when planning for sustainable service delivery. While the issues facing the City are not insignificant, they are manageable through careful planning and a coordinated and sustained effort from all stakeholders involved.

6.2 Recommended Improvements

Moving forward, the City's Corporate Asset Management Office (CAMO) aims to continue improving in a number of different areas, with initiatives that are intended to support the City's efforts to implement its Strategic Plan, meet service delivery requirements, manage asset risk and strengthen future financial plans.

It is recommended that the City though CAMO:

- Develops the Corporate Asset Management Program including the implementation and/or review of its administrative policy, strategies, practices, and procedures.
- Introduces new corporate practices and behaviors, coordination, and consolidation of efforts to lead this process of change.
- Optimizes the balance between Levels of Service (LOS), risk and cost with the aim of meeting customer service levels at the lowest lifecycle costs - LOS should be defined and quantified for each service type to become the driver for the identification of asset needs and the basis for investment decisions for a wide spectrum of assets.
- Improves and upgrades Tangible Capital Asset (TCA) reporting as the TCA fixed asset registry is not as detailed and accurate as the other sources of inventory within each department. The TCA data is also at a much higher level in the asset hierarchy than the level at which the assets are managed. This creates difficulties in reporting betterments to partial assets over time.
- Establishes and adheres to standards that follow database best practices to lay the foundation for successful long-term data management and quality, which in turn will improve the City's ability to plan short-terms and long-term infrastructure needs - daily operations and maintenance, renewal investment decisions. Focus should be set in those areas in need of better asset management data to improve confidence to the five main data input categories – Asset Inventory, Asset Condition, Useful Life and Remaining Useful Life, Replacement Valuations and Financial Forecasts.
- Understands the full lifecycle cost of growth and upgrading assets as part of the master planning decision process – initial installation/construction costs, plus future liabilities in terms of maintenance, operations, renewal, and disposal costs. This SOIR focuses only on the renewal requirements for existing assets.
- Examines current and future investment priorities and the delivery of services with a view towards mitigating growth of the infrastructure gap - including examination of the current reserve fund levels used for life cycle renewal activities and/or start building a reserve fund to be used exclusively for addressing the infrastructure gap.
- Improves decision making through better alignment with council objectives and organizational priorities (as defined by the Strategic Plan), a structured needs identification and prioritization process, and by leveraging information and quality data from across the organization. A refined and more robust decision-making process that improves the connection between the City's goals and needs as well as pushes projects through a structured investigation and prioritization process will be designed and implemented. Appendix 4 shows one such process currently being assessed.
- Ensures engagement among stakeholders and key subject matter experts to enhance effective communication and data transparency.
- Continues to develop robust condition assessment programs for all asset categories on a pre-determined schedule to keep data current and accurate.
- Implements an Asset Management Technology Platform to benefit from a more integrated relationship between asset conditions, remaining service lifecycles and future replacement or major asset rehabilitations. This will ensure that asset future needs, resources and conditions are more readily and easily predicted, resulting in easier and more accurate long-term planning for the City.

7.0 Appendices

Appendix 1 – Asset Management Terminology

Term	Definition
Asset	An item, thing or entity that has potential or actual value to an organization.
Asset Management	Coordinated set of activities of an organization to realize value from assets.
Asset Management Plan	Documented information that specifies the activities, resources, and timescales required for an individual asset, or a grouping of assets, to achieve the organization's asset management objectives.
Asset Management System	The people, processes, tools and other resources involved in the delivery of asset management. Management system for asset management whose function is to establish the asset management policy and asset management objectives. The asset management system is a subset of asset management.
Asset Portfolio	Assets that are within the scope of the asset management system.
Asset System	Set of assets that interact or are interrelated.
Asset Type	Grouping of assets having common characteristics that distinguish those assets as a group or class.
Capability	Measure of capacity and the ability of an entity (system, person, or organization) to achieve its objectives. Asset management capabilities include processes, resources, competences, and technologies to enable the effective and efficient development and delivery of asset management plans and asset life activities, and their continual improvement.
Competence	Ability to apply knowledge and skills to achieve intended results.
Condition	A description of the state of an asset with regards to its appearance, quality and/or working performance. Refer to Appendix 3 for a description of the condition definitions used within this AMP.
Continual Improvement	Recurring activity to enhance performance.
Core Asset	The infrastructure assets that support the following service areas are to be considered Core assets for the purpose of asset planning: • Roads • Bridges • Sidewalks and Trails • Stormwater Management • Facilities • Fleet - Equipment and Vehicles • Parks incl Trees
Corporate Asset Management	The application of asset management principles at a corporate level to maximize consistency among diverse asset groups. Corporate Asset Management creates efficiency by harmonizing service levels and business processes wherever possible.
Corporate Leadership Team (CLT)	Person or group of people who directs and controls an organization at the highest level.

Corrective Action	Action to eliminate the cause of a non-conformity and to prevent recurrence.
Critical Asset	Asset having potential to significantly impact on the achievement of the organization's objectives.
Current Replacement Value (CRV)	The cost to replace the asset with a new version of that asset that provides the same function, meets the same target service levels (or in the case of a building is the same size and function) and is built according to modern standards. Usually expressed in current year dollar value.
Effectiveness	Extent to which planned activities are realized and planned results achieved.
Expected Useful Lifecycle (EUL)	The length of time in years that an asset is expected to be able to provide effective service or meet expected performance targets.
Intangible Assets	Non-physical assets, such as leases, brands, digital assets, use rights, licenses, intellectual property rights, reputation, or agreements.
Level of Service (LOS)	Parameters, or a combination of parameters, which reflect social, political, environmental, and economic outcomes that the organization or asset delivers.
Lifecycle / Lifecycle Planning	The different stages involved in the management of an asset. These include: • Needs identification • Planning / design • Acquisition / construction • Operating and maintaining while in use • Modification or upgrade (i.e. rehabilitation) • Disposal / demolition The lifecycle stages are normally expressed in the form of a continuous cycle emphasizing the need for sound planning.
Management System	Set of interrelated or interacting elements of an organization to establish policies and objectives and processes to achieve those objectives.
Net Book Value	The original cost of an asset, less any accumulated depreciation, accumulated depletion, or accumulated amortization, and less any accumulated impairment. The value at which a company carries an asset on its balance sheet.
Objective	Result to be achieved. An objective can be strategic, tactical or operational and can relate to different disciplines (such as financial, health and safety, and environmental goals) and can apply at different levels (such as strategic, organization-wide, project, product and process). In the context of asset management systems, asset management objectives are set by the organization, consistent with the organizational objectives and asset management policy, to achieve specific measurable results.
Organization	Person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives.
Organizational Objective	Overarching objective that sets the context and direction for an organization's activities. Organizational objectives are established through the strategic level planning activities of the organization.

Organizational Plan	Documented information that specifies the programmes to achieve the organizational objectives.
Performance	Measurable result. Performance can relate either to quantitative or qualitative findings. Performance can relate to the management of activities, processes, products (including Services), systems or organizations. For the purposes of asset management, performance can relate to assets in their ability to fulfill requirements or objectives.
Policy	Intentions and direction of an organization as formally expressed by its top management.
Predictive Action	Action to monitor the condition of an asset and predict the need for preventive action or corrective action.
Preventive Action	Action to eliminate the cause of a potential nonconformity or other undesirable potential situation.
Process	Set of interrelated or interacting activities which transform inputs into outputs.
Remaining Useful Lifecycle (RUL)	The length of time in years that an asset is expected to be able to continue to meet expected service levels or meet expected performance targets.
Requirement	Need or expectation that is stated, generally implied or obligatory.
Risk	Effect of uncertainty on objectives. Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated "likelihood" of occurrence.
Service Area Master Plan	A planning document specific to one service area or group of assets that highlights the current state of those assets and future capital needs or projects.
Stakeholder	Person or organization that can affect, be affected by, or perceive themselves to be affected by a decision or activity. A "stakeholder" can also be referred to as an "interested party".
Strategic Asset Management Plan	Documented information that specifies how organizational objectives are to be converted into asset management objectives, the approach for developing asset management plans, and the role of the asset management system in supporting achievement of the asset management objectives.
Tangible Capital Asset	Physical asset, typically equipment, inventory and property, owned by the organization.
Whole Life Costing	The practice of using forecast costs through all stages of an asset's expected useful lifecycle when completing financial analysis (from planning / design, acquisition/construction, operating & maintenance, mid-life rehabilitation, disposal/demolition. Whole life costing is intended to provide an understanding of all of the costs associated with an asset, before, during and after the active service life of the asset.

Appendix 2 – Data Sources and Repositories

The methodology used to determine the findings of this SOIR is described in this part. Data already collected by the different departments/ asset owners was used in the development of this first SOIR. Future iterations of this report will be built on more reliable and accurate data specifically adapted to AM reporting.

The City stores and manipulates infrastructure assets information in multiple formats such as hard copy and business applications. This information was relied on to establish inventory, valuation, and condition of the core infrastructure.

The table below gives an overview on the data systems used to extract information for this SOIR.

Asset Group Type	Key Data Systems / Sources
Roads	Road Inspection Reports; Road matrix; Departmental Inventories; GIS
Bridges	Bridge Inspection Report; Master Bridge Inspection Schedule; Any other repository
Traffic Signals	Traffic Signals Inspection Reports; Departmental Inventories; Any other repository
Sidewalks and Trails	Sidewalks and Trails Assessment Reports; GP Sidewalks and Trails Condition Summary; Road matrix
Stormwater	Stormwater Master Plan; Bear Creek Corridor Assessment; Departmental Inventories
Facilities	Facility Condition Assessment; Departmental Inventories; Maintenance Connection; TCA report
Fleet	Fleet Management Software; Departmental Inventories
Parks	Maintenance Connection; Departmental Inventories

Appendix 3 – Asset Condition

The condition of each asset category, group type and individual asset (where applicable) was evaluated to determine the current health of the City's core infrastructure assets.

The five-point rating scale (Table 2) was used to align to the scales employed by the Canadian National Infrastructure Report Card produced by the Federation of Canadian Municipalities (FCM), the Canadian Society for Civil Engineering (CSCE), and the Canadian Construction Association (CCA).

Rank	Condition	Definition
1	Very Good	The infrastructure in the system is in generally good condition, typically new or recently rehabilitated. A few elements show signs of deterioration that require attention.
2	Good	The infrastructure in the system is in good condition; some elements show signs of deterioration that require attention. A few elements show sign of significant deficiencies
3	Fair	The infrastructure in the system or network is in fair condition; it shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies.
4	Poor	The infrastructure in the system or network is in poor condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration.
5	Very Poor	The infrastructure in the system or network is in unacceptable condition with widespread signs of advanced deterioration. Many components in the system exhibit signs of imminent failure, which is affecting service.

Three methods were used to determine the condition of the City's assets based on availability and accuracy of existing data:

- Existing condition rating systems (e.g. Pavement Quality Index, Bridge Condition Index, Facility Condition Index etc.)
- Estimated based on age and the remaining estimated useful life of the asset. A general and widely used deterioration classification presented in Table 2 has been used to derive condition.
- Estimated based on expert opinion, in the absence of 1) or 2) above or where there was low confidence that age and useful life appropriately represented the asset. For example: Some facilities condition in this SOIR will have a condition of Good to Fair despite they have only 20% of the EUL life remaining due to proper maintenance and upkeep based on the expert opinion. The opinion of the expert would override age and useful life in this circumstance.

The methodology and approach to assigning condition to each asset category is detailed in the table on page 40.

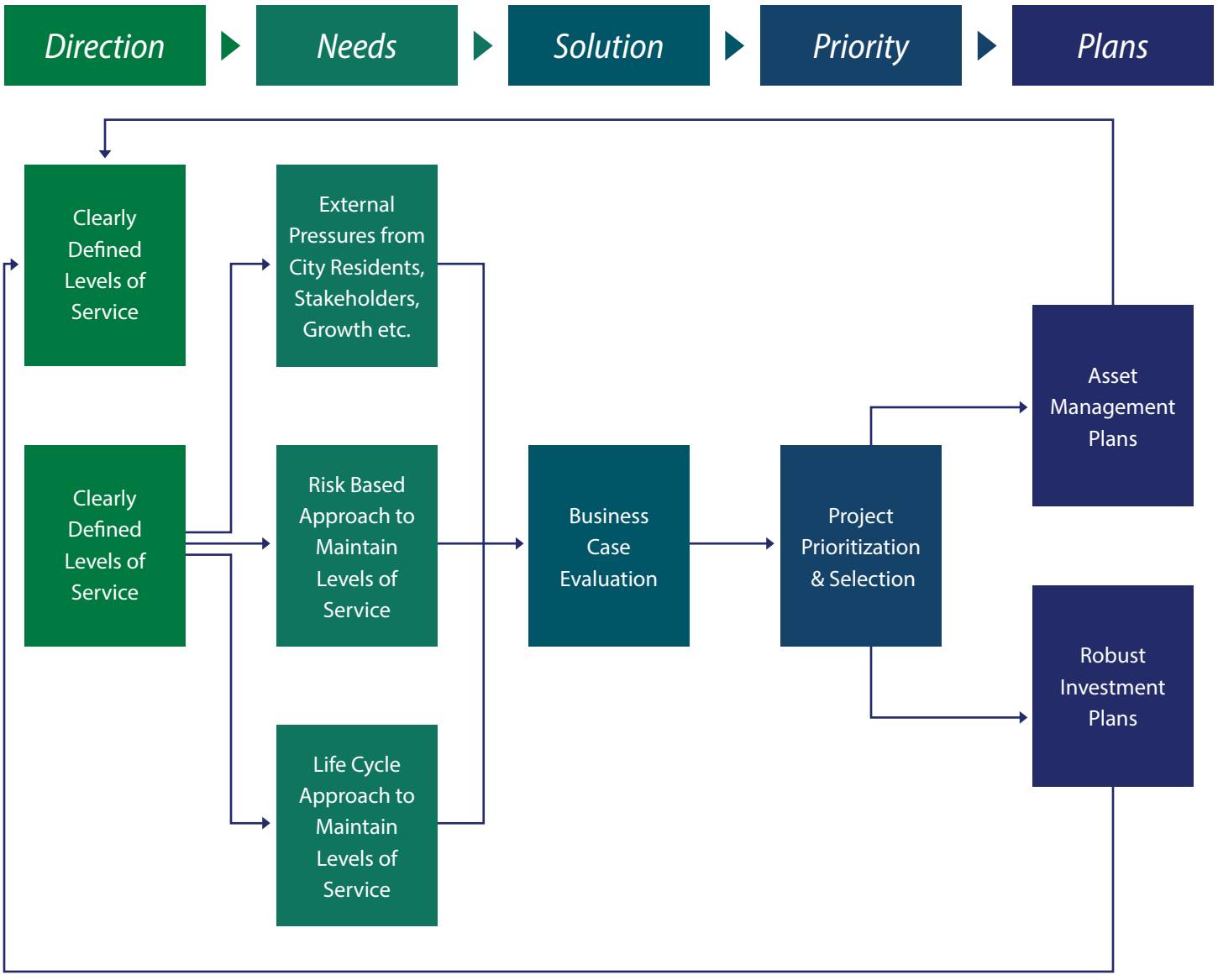
Condition	Remaining Useful Life (RUL) as a % of Expected Useful Life (EUL)
Very Good	≥80%
Good	80% >Age≥60%
Fair	60%>Age≥40%
Poor	40%>Age≥20%
Very Poor	Age<20%

Asset Group Type	Condition Methodology	Rating / Index	Comments	Condition Range
Roads	Existing Rating System	Pavement Quality Index (PQI)	The PQI is an industry standard benchmark used to indicate the general condition of pavement. The method to calculate the PQI is based on a technical inspection of the number and types of distresses in a pavement. It is important to note that the minimum acceptable PQI (trigger points) are: 55 for Arterial roads; 50 for Collector roads; 45 for Local Roads and 55 for Primary Highway Connectors.	Very Good - PQI ≥ 80 Good - PQI> 60 but ≤ 80 Fair - PQI > 40 but ≤ 60 Poor - PQI > 20 but ≤40 Very Poor- PQI < 20
Bridges	Existing Rating System	Bridge Condition Index (BCI)	The BCI is a commonly used benchmark that rates the condition of a bridge by evaluating and rating its subcomponents, such as foundations, piers, deck structure, sidewalks/ curbs/median, abutments or side walls, railings, etc.	Very Good - BCI≥ 80 Good - BCI> 60 but ≤80 Fair - BCI> 40 but ≤ 60 Poor - BCI> 20 but ≤40 Very Poor- BCI < 20
Traffic Signals	Age - Remaining Useful Life (RUL) and Expected Useful Life (EUL)			Very Good - RUL ≥ 80% of EUL Good - EUL ≥ 60%, but < 80% of EUL Fair - RUL ≥ 40%, but < 60% of EUL Poor - RUL ≥ 20%, but < 40% of EUL Very Poor - RUL < 20% of EUL
Sidewalks	Existing Rating System	Sidewalk Condition Index (SCI)	SCI represents the presence, severity, and extent of various surface distresses (e.g., cracking, potholes, etc.), occurring throughout a given segment, and represented by a value on a scale of zero (0) to 100. This SOIR has aligned the ASTM Standard SCI Condition Classification (as presented in the Consultant's Assessment) to its 5 point rating scale for standardization purposes.	Very Good - SCI ≥ 86 Good- SCI ≥ 70 but < 86 Fair - SCI ≥ 56 but <70 Poor - SCI ≥ 41 but < 56 Very Poor - SCI < 41
Trails	Existing Rating System	Trail Condition Index (TCI)	TCI represents the presence, severity, and extent of various surface distresses (e.g., cracking, potholes, etc.), occurring throughout a given segment, and represented by a value on a scale of zero (0) to 100. This SOIR has aligned the ASTM Standard SCI Condition Classification (as presented in the Consultant's Assessment) to its 5 point rating scale for standardization purposes.	Very Good - SCI ≥ 86 Good - SCI ≥ 70 but < 86 Fair - SCI ≥ 56 but <70 Poor - SCI ≥ 41 but < 56 Very Poor - SCI < 41

Storm-water	Age - Remaining Useful Life (RUL) and Expected Useful Life (EUL)			Very Good - RUL ≥ 80% of EUL Good - EUL ≥ 60%, but < 80% of EUL Fair - RUL ≥ 40%, but < 60% of EUL Poor - RUL ≥ 20%, but < 40% of EUL Very Poor - RUL < 20% of EUL
Facilities	Existing Rating System; Age; Expert Opinion		FCI - Standard facility management benchmark that is used to objectively assess the current and projected condition of a building asset.	Very Good - FCI ≤ 5% Good - FCI> 5% but ≤ 10% Fair - FCI > 10% % but ≤ 15% Poor - FCI > 15% but ≤ 25% Very Poor - FCI > 25%
Fleet	Age - Remaining Useful Life (RUL) and Expected Useful Life (EUL)			Very Good - RUL ≥ 80% of EUL Good - EUL ≥ 60%, but < 80% of EUL Fair - RUL ≥ 40%, but < 60% of EUL Poor - RUL ≥ 20%, but < 40% of EUL Very Poor - RUL < 20% of EUL
Parks	Age - Remaining Useful Life (RUL) and Expected Useful Life (EUL) and Expert Opinion		The condition profile for playgrounds is calculated using a combination of age and expert opinion. As construction year data and condition assessments reports are unavailable for outdoor structures, condition profile for this group has been noted based on expert opinion.	Very Good - RUL ≥ 80% of EUL Good - EUL ≥ 60%, but < 80% of EUL Fair - RUL ≥ 40%, but < 60% of EUL Poor - RUL ≥ 20%, but < 40% of EUL Very Poor - RUL < 20% of EUL

Appendix 4 –Refined Decision-Making Process

The Corporate Asset Management Office in collaboration with the Finance department and other internal stakeholders is elaborating a refined version of the decision-making process (investment planning) to ensure projects undergo a structured investigation and prioritization process. The key component of this evolving decision-making process is to establish criteria – points by which decisions can be judged and quantified.



1. **Goals:**

- Clearly defined organizational goals and council priorities, as outlined in the Council Strategic Plan.
- Directly tied to the AM objectives and a Levels of Service (LOS) framework.

2. **Needs:**

Assess service needs against customer LOS to identify required improvements. 3 categories of service needs:

- External pressures on the City - either directly from municipal customers/residents/stakeholders or from the regulators that require a different LOS to be delivered.
- Maintaining the existing asset base in the short term with an appropriate level of risk while delivering the existing LOS; and
- Maintaining the existing asset base over the long term by planning for life cycle intervention and more significant capital maintenance/renewal/ rehabilitation projects on the assets.

3. **Solution:**

Business Case development for each project – can be informed by additional feasibility studies. Takes into account the whole lifecycle perspective of the asset.

4. **Priority:**

- Evaluation of business cases and identification of preferred options
- Prioritization process - Identification of relative priority of projects (based on a set of criteria) within budget constraints and in alignment with organizational priorities.

5. **Plan:**

Preparation of optimum capital plan along with other operational solutions to be integrated in the budget process and included in the Finance department's 5-yr plan with funding sources being identified and allocated.

Through this structured and robust process, investment decisions will be directly linked to council and organizational priorities and LOS.

In establishing decision-making criteria, the City will integrate consistency and quantitative analysis into the decision-making process which will be standardized across the organization.

As part of the Business Case and Project Prioritization Process effort in the AM Roadmap, the City will establish a set of decision-making criteria. These criteria will consider:

- **Council's Strategic Plan –** aligning with goals and principles set by the City's Council;
- **Levels of Service (LOS) –** including H&S, Regulatory requirements etc;
- **Organizational Objectives -** aligning with the future direction of the City;
- **Best Practice Infrastructure Asset Management -** aligning with other proven municipal efforts.

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