
Draft Report

Business Unit Asset Management Plan Framework & Guidelines

Prepared for



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CH2MHILL®

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Background

The City of Winnipeg’s Corporate Asset Management Program guides City Departments and business units in the application of standards, practices and tools supporting effective service delivery through the sustainable management of public infrastructure. As part of this initiative business units are responsible developing Asset Management Plans (AMPs) documenting the measures needed to meet service requirements, while managing risk and minimizing the cost of infrastructure ownership. These business unit plans will be rolled-up in to an overall Corporate Asset Management Plan for the City.

Asset Management Plans

An Asset Management Plan (AMP) documents an organization’s strategy for meeting defined service objectives through strategic infrastructure investment and business change over time. The AMP provides a platform to detail and systematically examine the relationship between service levels and the existing asset base, management practices and levels of investment, and to establish an improvement program to progressively address identified gaps and deficiencies. Once established, the AMP allows the organization to:

1. Demonstrate that the Level of Service (LOS) for each of the Service Areas is being delivered in the most effective and efficient manner.
2. Demonstrate that due regard is being given to the long-term stewardship of the asset base.
3. Demonstrate the responsible management of the asset portfolio.
4. Communicate and justify funding requirements.
5. Show how regulatory compliance will be achieved and growth accommodated while maintaining the asset stock.
6. Easily extract the information needed to produce a City-wide State of Infrastructure Report.

AMPs integrate with and guide the investment planning process. In addition to identifying needed changes to assets, people, and processes, the document’s long-range outlook provides insight in to the affordability of delivering service at a defined level.

The AMP Framework

The City of Winnipeg AMP Framework is consistent with current Canadian best practice and aligns with the Guide to Municipal Asset Management Plans, produced by the Ontario Ministry of Infrastructure in 2013. AMPs of this format are broken in to seven parts, covering the following topics:

Part	Title	Content
1	Executive Summary	Provides a succinct overview of the Asset Management Plan, highlighting major points. It is the final section to be prepared.
2	Introduction	Provides an overview of asset management within the City and sets the overall context and expectation for the report.
3	State of Local Infrastructure	Presents information on the asset portfolio including inventory, condition, cost, etc. accompanied by information on supporting data.
4	Desired Levels of Service	Describes how service is linked to infrastructure investment, defined how service is measured and how performance goals and expectations are identified and set.
5	Asset Management Strategy	Sets planned actions that will enable the assets to provide the desired levels of service in a sustainable way, while managing risk, at the lowest lifecycle cost (e.g. through preventative action).
6	Financing Strategy	Identifies lifecycle investment requirements and appropriate funding strategies for completing the work.
7	Improvement and Monitoring Plan	Describes how AM will be monitored and improved across the City over time.

About this Document

This document describes the City of Winnipeg (City) Asset Management Plan (AMP) Framework and guides creation of business unit AMPs. Material is broken in to seven sections aligning with those of the AMP Framework. In addition to providing guidance on the completion of each section, where common to all business units, suggested content is also presented.

PART 1

Executive Summary

The executive summary section of the AMP should be able to be read as a stand-alone document that provides a succinct summary of the main elements for the plan. Less structure is provided in this section than the rest of the Framework in order to allow for flexibility. As a minimum the following content should be highlighted:

- Plan Background and Status
- Infrastructure State and Performance
- Asset Management Practices
- Financial Forecasts and Funding Strategy
- Improvement Plan

Introduction

The Introduction provides an overview of Asset Management within the City and Department and sets out the objectives and context for the Asset Management Plan. Information can be broken in to six sections, the details of which are described below.

Asset Management within the City and Department

This section provides a high level overview of asset management within the City and the Department. As a minimum, it should highlight roles and responsibilities for various components of the asset management program, and highlight their relationship to the City’s Asset Management Administrative Standard.

Content Example
<p>The City of Winnipeg has embraced asset management as a core business function and has adopted a comprehensive approach to managing its assets to meet required levels of service at the lowest lifecycle cost of ownership. To meet this objective responsibility for the asset management function is divided between the Corporate Asset Management Program and the City’s Departments.</p> <p>The City of Winnipeg’s Corporate Asset Management Program is responsible for the development and upkeep of the City’s Policies and Strategies relating to asset management, and guides City Departments and business units in the application of standards, practices and tools supporting the sustainable management of public infrastructure. Specific roles and responsibilities of the Manager of the Corporate Asset Management Program are detailed in the Asset Management Administrative Standard, and are summarized as follows:</p> <ul style="list-style-type: none">• Coordinates and Chairs Asset Management Steering Committee and Network Committee meetings• Facilitates skills development (Training) as it relates to asset management across the organization• Facilitates communication and change management as it relates to asset management• Coordinates internal and external AM benchmarking, including Asset Management Program Benefits tracking• Develops and manages the City’s Asset Management Policy, Processes, Procedure, Guidelines and templates• Works with Departments to develop and publish the annual State of the Infrastructure Report• Coordinates tracking of City-wide AM maturity (using the CAMRA Tool??)• Coordinates the development of Inter-Departmental Service Level Agreements• Provides guidance and oversight to the Departments on the City’s approach to: Investment Planning, Grant applications and Third Party funding• Monitors the overall progress of the CIP with regard to outputs and benefit delivery <p>Each of the Departments compliment this centralized asset management function by taking on responsibility for various aspects of infrastructure operations, planning and renewal, and contributing to the corporate budgeting process. While the structure and distribution of work varies from group to group, each department has the following core responsibilities:</p> <ul style="list-style-type: none">• Implement and maintain asset management practices which are consistent with the Corporate Asset Management Framework• Develop and Update a Department Asset Management Plan• Prepare and maintain Lifecycle Management Strategies for key asset classes• Track and report on asset management benefits and outcomes at the departmental level• Maintain staff proficiency in specific asset management disciplines• Participate in Asset Management Network Committee meetings

Plan Overview

The Plan Overview describes the AMP’s purpose and highlights its relation to asset management within the business unit and the City. As a minimum, the Overview should include the following:

- A brief description of the Asset Management Plan and its purpose and objectives.
- A discussion of the current status of AMP deployment, and the desired evolution of the Plan over time.
- A summary of Asset Management Plan outcomes

Content Example

This business unit Asset Management Plan serves several purposes. The Plan is a long term strategic document fostering service sustainability and the achievement of key corporate results. It also translates the City’s and business unit’s short and long term strategic goals into specific tasks and activities for managing its infrastructure assets cost effectively.

Business units are responsible for developing Asset Management Plans capable of meeting service requirements, while managing risk, and minimizing the cost of infrastructure ownership. The business unit plans will be rolled-up in to an overall Corporate Asset Management Plan for the City.

The Asset Management Plan summarizes current infrastructure planning and decision making practices within the business unit, and identifies the actions needed to meet current and future service delivery goals. This is a “living document”, which will be regularly updated and built upon to track the evolution of asset management within the City, and guide the ongoing refinement of practices, strategies, and tools.

The Asset Management Plan provides a framework/platform for building upon current practices to achieve a comprehensive Asset Management Program within the business unit and across the City. To achieve this outcome the Plan includes the following items:

- A structured description of the relationship between the City’s physical infrastructure and the services the business unit is responsible for delivering.
- A report of current service levels as they relate to short and long-term objectives
- A list of business and operational improvements that align with the Corporate Asset Management Strategy and Asset Management Administrative Standard to achieve targeted results.
- A list of projects, and delivery schedule, selected based on the rigorous Investment Planning Framework implemented at the City.

Support for City and Department Goals

This section shows how Asset Management efforts, and the Plan align with the overall goals and objectives of the City and Department. This will involve highlighting alignment between the Plan and adopted asset management practice and stated City and Department goals presented in “Our Winnipeg” and other strategic documents.

Content Example

As one of several business processes that take place within the City, the goals of this Asset Management Plan are clearly aligned with the City of Winnipeg’s strategic priorities. The table below highlights how the AMP aligns with strategic objectives outlined in “Our

Strategic Statement	AMP Alignment
<p>Our Winnipeg: “Living and caring because we plan on staying.”</p> <p>This statement considers future generations’ social, economic and environmental wellbeing in the decisions we make today. It’s a recognition that the survival of future generations is our responsibility and that when we act, we need to consider how those actions will affect future generations.</p>	<p>The wellbeing of the City is dependent on reliable high quality infrastructure services that attend to the needs of its residents and encourage the development of its businesses. The AMP aligns capital spending with needs based on target level of service standards across various service areas.</p>
<p>Strategic Objective 01-1: City Building Direction 3: Promote compact urban form and manage the extension of municipal services for new growth.</p>	<p>AMP provides procedures and tools to allow for optimal allocation of capital infrastructure spending to achieve City Building objectives</p>
<p>Strategic Objective 01-2: Safety and Security Direction 4: Promote safety on streets and sidewalks.</p>	<p>AM data provides a better understanding of the state of the City’s infrastructure and provides decision-makers with tools to allow for optimal selection of asset intervention options related to Safety and Security</p>
<p>Strategic Objective 01-3: Prosperity Direction 5: Demonstrate visionary civic leadership and commitment to sustainable long-term planning.</p>	<p>AMP provides transparency and defendability in communicating priorities and outlining how capital spending decisions are made across various service areas to support the City’s objectives of building a sustainable community.</p>
<p>Strategic Objective 03-1: Opportunity Direction 2: Provide equitable access to municipal programs, services and facilities.</p>	<p>AMP provides a level of service framework that captures financial, social and environmental objectives and helps align decisions with these objectives</p>

Winnipeg”, the City’s 25-year vision, and its “Direction Strategies” which provide additional detail in key planning areas.

Linkages to Other Strategic Documents

This section identifies linkages between the Asset Management Plan and other City and Department strategic documents. The City of Winnipeg relies on a number of strategies, programs and initiatives to manage the wide scope of its municipal services. These plans are supported by by-laws, policies, strategic plans, business plans, etc. Ideally, the business should demonstrate how the Asset Management Plan is supported by these documents in achieving corporate objectives and strategies.

Content Example	
This Plan is intended to align with and support the City and Department's existing foundation documents. These relationships are highlighted in the following table. Further integrations are planned as part of the City's long-term asset management strategy and will be reflected in future iterations of this document.	
2013 Capital and Operating Budgets	The budgets present the current year committed funding, and a 5 year projection for operating and capital budgets. This first Plan focuses on the 5 year capital program, and the planned actions and project listings extracted from current budget documents. The intent is to extend future plans to cover full asset lifecycle management, and detail the needed procedural, capital and operating investments needed to deliver required service.
Our Winnipeg	The "Our Winnipeg" document frames the direction of the Asset Management Plan. It sets out the guiding principles and high level objectives of the Plan.
Transportation Master Plan	The Transportation Master Plan sets out a long-term strategy to guide the planning, development, renewal and maintenance of a multimodal transportation system in a manner that is consistent with projected needs, and aligned with the City's growth and the overall vision for a sustainable Winnipeg and region. The Transportation Master Plan frames the direction of the Transportation Asset Management Plan. The Asset Management Plan is at a more granular level than the Master Plan, and even speaks to the feasibility of whether the Master Plan can be achieved and/or sustained.
By-laws, policies, master plans, area plans, plans of subdivision, business plans	Generally these more detailed documents provide the information required to draft the Asset Management Plan, leading to more effective planning and decision-making.

Plan Scope

This section summarizes the assets and services currently under the business unit's jurisdiction, highlighting those included within the plan, and any which have been excluded from the current iteration. It is recognized that some assets may be excluded from early Asset Management Plans, due to data or development issues, the lack of valid information, or other constraints. If needed, the nature and reason for exclusions should be presented and discussed.

Content Example
This Asset Management Plan focuses on high level planning for the Roads and Transportation business units. The Plan addresses four core service areas: Roads, Bridges, Transportation, Signals
This Plan does not cover Lighting, Signage or Markings. Lighting services are delivered through third-party agreement with Manitoba Hydro; terms of this agreement are fixed and evaluated... Signage and markings are managed operationally, with improvements dictated by....

Timeframes

This section clarifies the timeframe covered by the Asset Management Plan. In early versions of the Plan, it is expected that the projections for infrastructure investments will be limited to one budget forecast period (i.e. 6 years). As further linkages between level of service and investment are established this forecast will be extended to 30+ years, to cover long-term service management. Ideally the Plan will align with asset lifecycles which vary from asset to asset, many lasting decades. Performance measures will be collected and monitored annually to ensure the Plan is being implemented. Significant events may trigger the need for additional updates.

The business unit, and the City, will also review periodically its Asset Management Policies, State of Infrastructure Report, etc. This section should also mention the frequency of the updates of these documents, as shown on the example table below:

Document	Update Frequency
Asset Management Policy	Every 10 years
Asset Management Plan	Every 5 years
State of Infrastructure Report	Every 2-3 years
Capital and Operating Budget	Annually

Development Methodology

This section should describe the business unit’s approach in completing the asset management plan and highlight any significant limitations or exclusions of the information presented.

Content Example

This Asset Management Plan serves as a documented summary of the Department’s asset management activities, as they support the broader objectives of the City’s Corporate Asset Management Program, initiated in 2011. Details of this program are defined within the Asset Management Administrative Standard, which is prepared and maintained by the Manager of the City Corporate Asset Management Program.

This Asset Management Plan employed an inclusive development approach, gathering information and input from the various Department asset management stakeholders. The Plan was developed in accordance with the City of Winnipeg AMP Framework; it is consistent with current Canadian best practice and aligns with the Guide to Municipal Asset Management Plans, produced by the Ontario Ministry of Infrastructure in 2013. It is broken in to seven parts, covering the following topics:

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Being the first version of the AMP, several limitations are known to exist and will help inform the continuous improvement process for future versions of the report.

1	The report covers only three of Department’s five core service areas. Selection was based on need and the availability of information. It is expected that other services will be systematically added through future plans.
2	The Department is in the early stages of implementing its comprehensive Level of Service framework and has no system in place to systematically capture and track levels of service beyond manual assessment. At this stage Level of Service assessments have been completed for major routes only. Further information will be presented as LOS on less critical routes and infrastructure components is captured and assessed.
3	Condition plays an important role in the lifecycle management of an asset. Depending on the asset, condition information is collected and ratings assigned in one of three ways: (1) Data is collected and technically assessed and reported using a quantifiable technique; (2) Condition is assumed based on age and estimated useful life; or (3) Condition is arbitrarily assigned based on the expert opinion of staff responsible for the asset’s operation. While the Department generally uses quantifiable techniques that are a more accurate and expensive, it may also use an alternate approach in one-time reporting situations using consultants to analyze and prepare reports. Roads and Bridges currently have reliable condition information. Condition ratings of signals and traffic infrastructure is estimated based on age and expected useful life.

PART 3

State of Local Infrastructure

The State of Local Infrastructure provides an up to date view of the Department's current asset portfolio. The approach in compiling this information will vary from Department to Department, based on the level of maturity of asset management practices, the nature of traditional assessment programs, and the availability of current and relevant data.

At a high-level, information requirements can be broken in to three components:

- 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?

Inventory

This section provides a structured snapshot of the infrastructure currently under the Department's control. Infrastructure should be broken out by service area, function and category to demonstrate the depth and breadth of the Department's asset base. Current and historical information should be presented to show the evolution of assets over time. Information should be collected from sources providing the best available data, such as GIS, CWMS, or other primary information systems. Known gaps and issues with information should be noted and discussed; where possible these can be filled in using supplementary data sources.

Content Example					
Water infrastructure can be broken in to Linear and Facilities based assets. Tables showing the breakdown by asset type are shown below. Historical information is also presented to highlight changes in asset base over the last decade.					
Service Area: Water		2003 Inventory	2013 Inventory	Change	% Change
Function: Water Distribution					
Linear Assets	Mains (m)	1,946,968	2,013,661	66,693	3.4%
	Hydrants	12,118	14,235	2,117	17.5%
	Valves	16,655	19,855	3,200	19.2%
	Services	132,988	143,826	10,838	8.2%
Facility Assets	Pumping Stations	24	25	1	4.17%
	Meters	132,988	143,826	10,838	8.2%

Valuation

The valuation of the assets is expressed in terms of "replacement value" or "replacement cost". The replacement value refers to the amount the business unit would have to pay to replace an asset with a new one, should it undergo catastrophic failure.

The replacement value of the business unit's assets can either be calculated based on the original installation cost, or estimated using unit rates or fair market value.

- **Asset Registry:** The database that keeps record of the asset inventory may also track historical unit costs which can be used to calculate the replacement value of the assets. This is likely to be the most accurate source of information for asset valuation.
- **Tangible Capital Assets report:** Tangible Capital Assets are the public property managed by the City to deliver programs and services. Every Municipality in Canada is required by the Financial Administration Act to report on its Tangible Capital Assets. The report includes the replacement value of all assets owned by the City. However, in TCA reports, many asset classes are "bundled" together and reported as a group of assets. It is therefore not always possible to extract the exact replacement value of a specific asset from the TCA report.

- **“In-house” estimate:** When replacement values for certain assets are not available in asset registry or easily accessible in TCA reports, the business unit should estimate them based on experience. Previous procurement documentation may be very useful in getting a fairly accurate valuation of certain assets.

Content Example					
The 2013 replacement cost for the City’s water distribution assets is estimated at \$2,089 Billion. This is a 24% increase from the value reported in 2009 and reflects both inflationary increases and growth in the asset inventory itself. The tables below summarize the replacement cost values (in millions) for each asset group.					
Service Area: Water		Replacement Value		Change	
Function: Water Distribution		2009	2013	\$	%
Linear	Mains	\$1,489	\$1,874	\$385	26%
	Hydrants, Valves, Services	Included in mains		N/A	N/A
Facilities	Pumping Stations	\$144	\$158	\$14	10%
	Meters	\$48	\$57	\$9	19%
Sum		\$1,681	\$2,089	\$408	24%

For communication purposes it may also be appropriate to contrast replacement value with book value, as presented in the TCA Annual Report. In addition to providing continuity between documents, this will help to demonstrate how the ‘value’ of infrastructure varies considerably, depending on the source and nature of the calculation.

Asset Condition Rating

The current state of the local infrastructure section standardizes the presentation of the asset condition into five categories: Very Poor, Poor, Fair, Good, and Very Good. The five-point rating scale is used to align ratings across asset types using the standard introduced by the 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). In addition to providing a sound basis for assessment, this allows for the benchmarking of results against the values presented in this document.

Ratings from Very Good to Very Poor reflect the condition of the assets as described in the table below:

Rating	Summary	Definition
Very Good	Fit for purpose	The infrastructure in the system or network is generally in very good condition, typically new or recently rehabilitated. A few elements show general signs of deterioration that require attention.
Good	Adequate for now	The infrastructure in the system or network is in good condition; some elements show general signs of deterioration that require attention. A few elements exhibit significant deficiencies.
Fair	Requires attention	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.
Poor	At risk	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.
Very Poor	Unfit for sustained service	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.

In addition to rating asset condition, this section should highlight how condition was originally collected, and how the translation to the five-point rating scale was achieved. Condition ratings may come from a variety of sources, including scheduled inspection, maintenance reviews, statistical performance modeling, etc. Where condition is not formally captured or tracked, it may need to be estimated using indirect data (e.g. age and expected useful life) or staff / expert opinion.

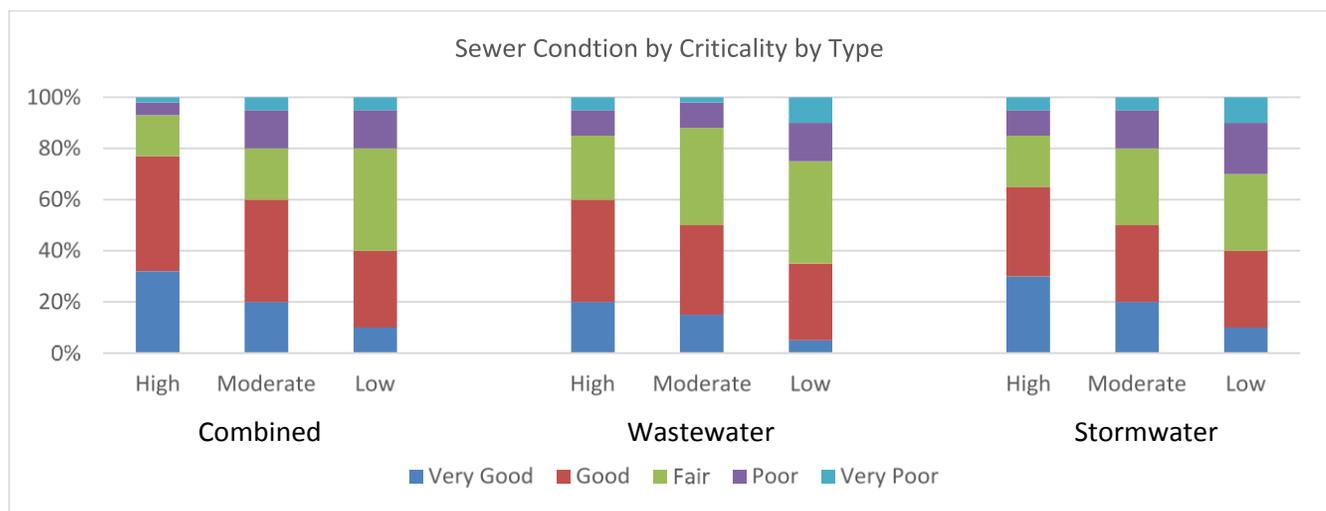
The second step is to translate the condition information into a five point scale rating score (Very good to Very Poor). When assets are assessed and rated through a standard methodology, the ratings can be banded to

translate in to the five point scale. For example, a Facility Condition Index score of between 0 and 5% is considered Very Good, between 5 and 10% Good, between 10% and 20% Fair, between 20% and 30% poor, and above 30% is considered Very Poor. Similar conversions can be established for other standard and non-standard rating scales such as SPG (sewers), PQI (roads), BCI (Bridges), etc.

When age and estimated useful life are used for estimating the condition of the asset, the general rule is to attribute a Very Good rating for assets with an age below 20% of the estimated useful life (EUL), Good for assets with an age between 20% and 40% of the EUL, Fair for assets between 40% and 60% of the EUL, etc.

Content Example

The City undertakes an annual CCTV inspection program to evaluate the condition of its combined, wastewater and storm sewer systems. Inspections and defect data are evaluated to establish a Structural Condition Grade (SPG) for each pipe. Grades range from one through five, with one representing a pristine sewer, and five a sewer which has structurally failed, or is in a state of imminent failure. Grades are converted to the corporate rating standard on a point-for-point basis, so an SPG of 1 represents a sewer in very good condition, 2 in good condition, etc. The expected current condition of each system is highlighted in the following chart.



Data Sources and Considerations

Likely Data Sources

The table below summarizes likely sources of Inventory, Valuation and Condition data for each business unit. This information should be updated to reflect changes to data collection and storage practices over time.

Business Unit	Inventory	Valuation	Condition
Water and Wastewater	GIS and various database and spreadsheets. New integrated Asset Management Software under development.	Spreadsheets & TCA	GIS and various database and spreadsheets. New integrated Asset Management Software under development.
Roads	Asset Register Enterprise.	PPT (Performance Prediction Technology from VEMAX)	Asset Register Enterprise/ Modelling of condition available in PPT (Performance Prediction Technology from VEMAX)
Municipal Accommodations	VFA	Likely TCA	VFA
Traffic	Staff knowledge (Nolan Burke and Dean Dickson). In house asset registry software under development.	Likely TCA	Access database
Parks	Parks Asset Registry (incomplete)	Likely TCA	Only for amenities and Forestry
Transit	MMIS (Maintenance Monitoring Information System) and dedicated spreadsheet	Master list of costs and replacement value with Account Receivable staff	MMIS (Maintenance Monitoring Information System) and dedicated spreadsheet
Fire	Various spreadsheets, VFA	Likely TCA	VFA reports and LOS assessment (for

			stations only).
Parking	Various spreadsheets	Likely TCA	Available from LOS assessments

Data Reliability and Accuracy

The quality of data used to report the current state of infrastructure will vary depending on the source for the data. To aid in the interpretation of the report, it is recommended in this section to include a data confidence rating in terms of reliability and accuracy of the data used for the analysis.

The data confidence rating scales, defined below, are used to support the rating, with confidence based on the lower of the reliability and accuracy ratings.

Measure	Description	High	Moderate	Low	Rating Scale
Reliability	Can be trusted to be accurate or to provide a correct result	Based on sound records, procedures, or analyses that have been acceptably documented, and are recognized as the best method of assessment	Based upon known reasonable procedures, or analyses that have been acceptably documented	Based upon expert verbal opinion or cursory inspections/ observations	
Accuracy	Probable difference between a recorded parameter and its true value	+/- 1%	+/- 10%	+/- 50%	

Desired Level of Service

Level of Service Context

This section highlights how levels of service tie in to and support the management of City infrastructure. This involves discussion of the City and business unit’s shift from an ‘Asset Stewardship’ to ‘Serviceability’ approach to asset management, the adoption of a service hierarchy and the corporate investment planning process, and the business unit’s progress in establishing effective service measures and aligning them with organizational and customer goals.

Content Example	
<p>The City of Winnipeg and the Parks business unit have adopted a ‘Serviceability’ approach to asset management, built on the alignment of infrastructure and investment with the services they support. Public infrastructure exists to provide service to citizens, customers and end-users; by tying needs to service outcomes we can evaluate the effectiveness and return on investment of addressing or various priorities, and focus spending on where it matters most.</p> <p>With guidance and support from the Corporate Asset Management Program the business unit has implemented many of the building blocks necessary to support this transition. Within the business unit, the Parks LOS framework links technical measures to customer outcomes and corporate business goals, establishing meaningful performance measures with which to evaluate and track service levels, and quantify gaps and risks to delivery. Across the City, the Corporate investment planning process ties infrastructure needs to service outcomes, and develops and prioritizes effective investments based on their impact to service and other priorities, and their value to the City.</p> <p>The Parks business unit has adopted a suite of twelve customer levels of service tied to its overall business objectives. Work is proceeding in establishing baseline ratings and setting preliminary targets for each indicator. Technical level of service indicators are being mapped and populated based on information from the work management system.</p>	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-between; width: 100%;"> <div style="background-color: #336699; color: white; padding: 10px; border-radius: 15px; text-align: center;"> Traditional 'Asset Stewardship' Approach </div> <div style="background-color: #336699; color: white; padding: 10px; border-radius: 15px;"> <ul style="list-style-type: none"> • Asset Centric • Capital Maintenance based on asset age and condition. • No assessment of the impact of asset on customer service • May limit the adoption of strategic solutions, system optimization and cost effective operational solutions to defer work; thus overstating capital solutions </div> </div> <div style="margin: 20px 0;"> </div> <div style="display: flex; justify-content: space-between; width: 100%;"> <div style="background-color: #C85133; color: white; padding: 10px; border-radius: 15px; text-align: center;"> 'Serviceability Approach' </div> <div style="background-color: #C85133; color: white; padding: 10px; border-radius: 15px;"> <ul style="list-style-type: none"> • Customer Centric • Capital Maintenance based on risk to service delivery • Considers the consequences of asset failure • Considers the capability of a system of assets and operators to deliver services </div> </div> </div>

The Investment Planning Manual provides a detailed methodology for developing a comprehensive suite of Level of Service indicators. The business unit should present their LOS hierarchy for key services showing the relationship between capital and operating investment items and corporate, business unit and customer objectives. The relationship between Corporate and business unit objectives (from strategic planning documents), CLOS Goals (supporting the objectives) and Customer and Technical LOS (measuring performance relative to the goals) measures should be highlighted.

Content Example				
The following service hierarchy has been established to support water distribution service delivery.				
Corporate Objectives	Business Unit Objectives	Customer LOS Goal	Customer LOS	Technical LOS
Provide accessible, clean, safe, reliable, drinking water to customers within the parameters of the current operating license	Providing affordable service to customers	Affordable Service	Full cost of service / connection / year	Non-Revenue Water (L/connection/day)
	Providing accessible services through the accommodation of growth needs	Accommodate Growth	# of development requests (connections) rejected or qualified due to service constraint	Not currently tracked; measure under development
	Ensuring the safety of utility employees	Keep employees safe	# of reported safety incidents / km	Number of lost-time incidents
				Number of reported 'near miss' incidents
	Ensuring the safety of the public	Protect the Public	# of Properties with Substandard Fire Service	% of Inoperable or Leaking Hydrants
				# of properties with inadequate fire flow
	Providing reliable services by ensuring sufficient quality and quantity of service	Sufficient quality / quantity	# of Pressure Complaints / 1,000 Served	Modeled operating pressure
				# of Quality Complaints / 1,000 Served
Providing reliable services by ensuring uninterrupted service delivery	Uninterrupted Service	# of Unplanned System Interruptions / 100 km Length	# of properties located on dead end mains	
			# of Main Breaks / 100 km Length	
Ensuring regulatory requirements by meeting license requirements	Meet License - Safety	# of boil water orders	% of Inoperable or Leaking Valves	
	Meet License - Environment	# of discharge incidents	Not currently tracked; measure under development	

Current Performance

This section reports the business unit’s performance in delivering service to its customers. Initial reporting may include a range of qualitative and quantitative measures from various sources. Over time this will shift toward reporting on measures forming the business unit’s service hierarchy, while maintaining key measures required to meet regulatory and corporate reporting requirements. It is recognized that many of the service criteria are new and information may initially be limited; in these cases reporting should be based on the best available information, and a plan established to improve the collection and reporting of information over time. Information can be presented in tabular and/or graphical format, and should include some discussion on expected drivers.

Content Example									
The following table highlights current water distribution LOS along with historical trending. No information is available for the cost of service; data sources are being investigated. Service is stable or improving in seven of eight areas, with two of these continuing to fall below minimum acceptable level of service (MALOS) targets. System reliability is degrading and continues to fall below target, brought about by the ongoing degradation of the asbestos cement pipe inventory; this is expected to subside as these pipes are gradually replaced.									
Customer LOS Goal	Customer LOS	MALOS	2009	2010	2011	2012	2013	Trend	
Affordable Service	Full cost of service / connection / year	NA	NA	NA	NA	NA	NA	?	
Accommodate Growth	# of development connections qualified due to availability	500	1,250	1,180	1,302	1,215	1,050	→	
Keep employees safe	# of reported safety incidents / km	0	1.2	1.0	1.1	0.9	0.8	↗	
Protect the Public	# of Properties with Substandard Fire Service	1,000	1,250	1,125	1,100	1,070	999	↗	
Sufficient quality / quantity	# of Pressure Complaints / 1,000 Served	2	1.44	0.71	0.33	0.24	0.28	↗	
	# of Quality Complaints / 1,000 Served	1	2	1.2	1	0.5	0.5	↗	
Uninterrupted Service	# of Unplanned System Interruptions / 100 km Length	50	52.2	60.7	62.4	67.2	65.8	↘	
Meet License - Safety	# of boil water orders	0	0	0	0	0	0	→	
Meet License - Environment	# of discharge incidents requiring report	5	5	2	3	6	4	→	

Trends

This section highlights and discusses any internal or external factors impacting the business unit's ability to deliver service. These can relate to specific performance measures (e.g. system reliability is decreasing because equipment is reaching the end of its useful life), or to the business unit's overall ability to deliver service (e.g. insufficient staffing, climate change, etc.).

Content Example

In addition to the measure-specific trends highlighted above, the following global factors are influencing the business unit's ability to service customers.

Climate Change	While the full impacts of climate change will not be fully understood in the near future, the City is currently experiencing issues that can be directly attributed to climate change. Examples include changing source water chemistry affecting water treatment plant operations (e.g. algae), severe winter weather leading to increased frost penetration, etc.
Aging Infrastructure	Some of the City's infrastructure are relatively old. This is a trend that will continue to burden the City and may impact its ability to provide high levels of service.
Uncertainty in Growth Forecasts	The uncertainty related to growth forecast is not entirely within the City's control and will continue to impact several financial and operational performance indicators.
Declines in water consumption	Ongoing conservation efforts have led to declines in average household water consumption. This has an impact on revenue generation from rates.
Changing public expectations	Societal and political influences will continue to shape the City's strategy and priorities. The fluid and rapidly changing nature of socio-political concerns, expectations and requirements will continue to influence the City's targets and priorities for service delivery. Examples of such expectations include aspects like enhanced environmental stewardship and more cost-effective delivery of services.

Asset Management Strategy

Asset Management Practices and Procedures

This section summarizes the principals, practices and tools used in managing a business unit's asset base to meet current and future service commitments. Information presented should generally align with the stages within the City's investment planning framework: Needs Assessment, Solution Definition, Priority Setting, and Plan Development.

The initial asset management strategy should focus on activities and assets contributing to the business unit's key service areas. As the Asset Management program is progressively implemented the strategy may evolve and include a broader range of assets and services.

Content Example

The Roads business unit has developed a large number of procedures, practices and tools that are used to drive infrastructure assessment and investment planning to support effective service delivery. The following table summarizes current strategies and practices; details on key items follow.

Stage	AM Activity	Roads
Needs Assessment	Inventory	<ul style="list-style-type: none"> Road inventory stored in GIS and Pavement Management System (VEMAX PPT)
	Performance Assessment	<ul style="list-style-type: none"> LOS measures currently being deployed Annual automated and visual condition assessment program in place
	Performance Forecasting	<ul style="list-style-type: none"> Deterioration model used to forecast pavement condition over time
	Demand Planning	<ul style="list-style-type: none"> Master plan defines long-term enhancements to address changing demand
	Risk Assessment	<ul style="list-style-type: none"> Cursory risk assessment performed using road type as consequence factor More rigorous assessment being deployed
Solution Definition	Options Analysis	<ul style="list-style-type: none"> Occurs within pavement management model Interventions assigned based on condition
	Work Coordination	<ul style="list-style-type: none"> Informal utility coordination through back-and-forth discussion with stakeholders
	Project Costing	<ul style="list-style-type: none"> Generated using unit rates, which are periodically refreshed
	Business Case Development	<ul style="list-style-type: none"> Prepared to City standard by asset management branch
Priority Setting	Department Priorities	<ul style="list-style-type: none"> Priorities within asset group identified by pavement management system, based on available funding envelope. Priorities across asset group not considered.
	Corporate Priorities	<ul style="list-style-type: none"> Corporate priorities evaluated using the MCP model to determine where they fit relative to other needs.
Plan Development	Capital Plan	<ul style="list-style-type: none"> Renewal plan developed by AM Branch using Pavement Management System Enhancement plan developed by Transportation based on Master Plan and additional needs
	Operating Plan	<ul style="list-style-type: none"> Developed by Streets Maintenance based on noted issues and historical needs
	Funding Plan	<ul style="list-style-type: none"> TBD

Subsections ranging from a paragraph to a page in length can be included to highlight details of key practices and programs. The level of detail should align with the importance of the activity and should include discussion of timing, responsibility, work steps and information flows.

Future Demand and Service Enhancement Activities

This section details the business unit's strategy for addressing future service requirements brought about by growth, shifting demand, and changes to policy and legislation. Drivers influencing future needs should be presented, followed by the business unit's strategy and mechanisms for meeting this need, and the basis for budgeting this work.

Content Example

The Roads business unit's future service requirements are primarily driven by three factors:

- Growth – Explain... How much growth? Where will it occur? How will it impact service requirements?
- Changing Standards – Explain... What sort of changes? How will they impact service requirements?
- Others??? – Explain...

The business unit addresses these requirements through the following programs and initiatives:

Activity	Description	Service Impact
Regional Streets Improvements		
Local and Regional Street Renewal	Local and Regional Street Renewal program enhancement activities can be broken in to three categories: Regional paving of granular shoulders Regional Accessibility Improvements Regional Intersection Improvements	

Lifecycle Management Activities

This section describes how the business unit plans to maintain current service through the lifecycle management of its assets. The nature and drivers behind current maintenance and rehabilitation / renewal activities should be presented and discussed, along with the basis for determining needed investments.

Content Example

The lifecycle management of roadway assets is accomplished through Streets Maintenance and Local and Regional Street Renewal activities, which are planned and coordinated by Streets Maintenance and the Roads Asset Management Branch, respectively.

Street Maintenance Program activities are broken in to the following categories.

Activity	Description	Service Impact
Joint and Crack Sealing		
Pothole Patching		
Concrete Restoration		
Others		

Local and Regional Street Renewal activities are broken in to the following categories.

Activity	Description	Service Impact
Regional Sidewalk and Curb Renewals		
Downtown Streets		
Regional Major Rehabilitation Works		
Regional Mill and Fill Rehabilitation Works		
Local Street/Lane Renewals		
Local Thin Bituminous Overlay (TBO)		
Enhanced Local Streets Renewals		

Risks

This section highlights factors impacting the City's ability to maintain service and/or meet its current goals. Information on the risks (likelihood and consequences) and service impacts associated with each factor should be presented.

Content Example

Several factors could prevent the Roads business unit from reaching/maintaining its roadway target level of service. An assessment of key issues is presented below.

Factor	Potential Impact	Likelihood	Consequence	Risk
Required funding not secured	<ul style="list-style-type: none"> • Backlog of work increases • Assets deteriorate further • Assets deteriorate beyond current need level (i.e., a maintenance need becomes a rehabilitation need) • More costly treatments are required • Network average LOS decreases 	H	M	M
Substantial increase in maintenance and rehabilitation costs	<ul style="list-style-type: none"> • Inability to complete all planned projects with allotted budget levels • Backlog of work increases • Assets deteriorate further • Assets deteriorate beyond current need level (i.e., a maintenance need becomes a rehabilitation need) • More costly treatments are required • Network average LOS decreases 	L	M	L
Underestimated deterioration rates	<ul style="list-style-type: none"> • More rapid asset deterioration • Underestimated funding needs • More costly treatments are required • Network average LOS decreases 	VL	L	VL

SECTION 6

Financing Strategy

The Financing strategy identifies and aligns available funding with the operating and capital investment needed to meet / maintain the business unit’s service requirements. Doing this requires an understanding of capital and operating expenditure needs, planned / budgeted expenditure over the next decade, and available funding sources and constraints.

In a mature plan, needed investment should be compared with planned spending and available funding sources to identify and quantify the service impact of any noted shortfalls. Where accurate ‘needs’ information is unavailable, then the service implications of embarking on the budgeted spending plan should be qualitatively discussed.

Expenditure History

This section highlight’s the business unit’s operating and capital expenditure history and relates it back to observed service trends. Ideally, spending information should align with the Service Enhancement and Lifecycle Management activities, presented in Section 5, however if needed breakdowns by asset or service focus are also acceptable. Qualitative discussion may be needed where clear relationships between investment and level of service are not known.

Content Example											
The following table relates road and bridge investment over the last five years to observed trends in level of service.											
Component	Expenditure						Level of Service				
	2009	2010	2011	2012	2013	Trend	Accessible	Safe	Reliable	Regulatory	Overall
Operating	\$50.9	\$51.1	\$51.4	\$51.6	\$51.9	↗	-	-	-	-	-
Roads - Paved	\$22.1	\$23.2	\$24.8	\$22.2	\$26.3	↗	↘	→	↘	→	↘
Roads - Unpaved	\$0.7	\$0.9	\$1.0	\$0.8	\$0.6	↘					
Roads - Traffic	\$32.1	\$30.4	\$25.8	\$24.7	\$25.1	↘					
Roads – Bridges	\$2.1	\$2.3	\$2.5	\$2.6	\$2.9	↗	↘	→	→	→	→
Total / Overall	\$107.9	\$107.9	\$105.5	\$101.9	\$106.8	→	↘	→	↘	→	↘
<p>Despite slight increases in operating and paved roads capital expenditure over the last five years, there have been noted degradations of service accessibility (affordability) and reliability (quality, capacity, interruption). Based on this it appears that historical spending is below that required to maintain service, and that service will continue to degrade without an increase in roadway investment.</p> <p>Bridge spending has seen a moderate increase over the last five years, and despite a slight reduction in accessibility (affordability), service appears to remain quite stable. Accordingly, it would appear that current funding levels are near those required to maintain service provided by these assets, and that further increases would only be needed to improve service or keep pace with anticipated deterioration.</p>											

Expenditure Forecast

The expenditure forecast presents the business unit’s investment strategy to main service and/or meet desired targets over the medium to long-term. When possible, the values presented should reflect the level of needed investment, and not budgeted spending, which is in many cases lower than that required to maintain service, and generally align with the Service Enhancement and Lifecycle Management Activities presented in Section 5. Where investment needs are not fully known (e.g. where relationships between spending and level of service has yet to be established) then budgeted investment can be presented, along with a commentary on how proposed spending will impact service levels.

As a minimum Plans will forecast investment requirements ten (10) years in to the future, even if this is insufficient to achieve the business unit’s ultimate service goal. Where advanced forecasting tools are in place, longer-term forecasts showing service attainment can be presented. Information on the source of the forecasts, along with any assumptions or limitations should also be presented and discussed.

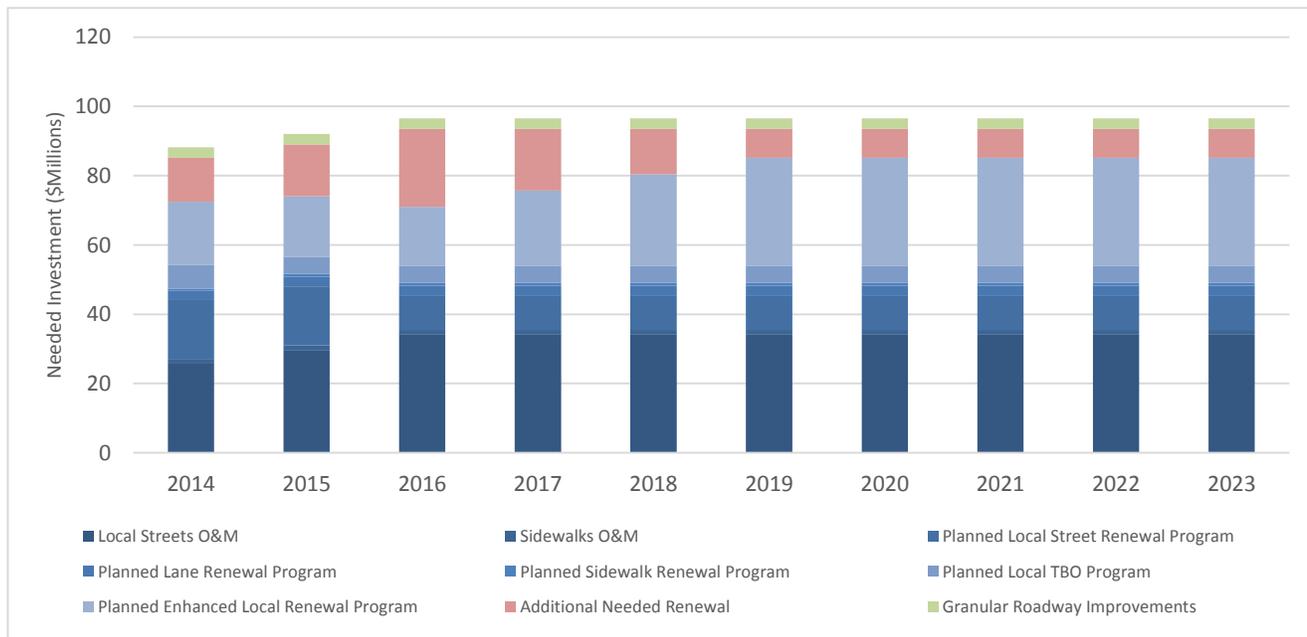
Content Example

The Roads business unit is updating its asset management practices to align and support with the service framework presented in Section 4. Using its pavement management system, the business unit is able to model the impact of spending on overall pavement quality rating, which as detailed in Section 4 aligns with the Reliability service objective within the LOS framework. As practices develop further LOS-investment relationships will be established, allowing for the further refinement of needs.

Roadways spending is currently allocated by asset group (local vs. regional streets), and service objective (maintain vs. enhance), based on the following table. Lifecycle Management activities are focused on maintaining service and meeting current service objectives, where Service Enhancement activities are focused on addressing growth and changing demands.

System	Lifecycle Management	Service Enhancement
Local Streets	<ul style="list-style-type: none"> Local Street / Sidewalk O&M Local Street / Lane / Sidewalk Renewals Local TBO Program Enhanced Local Streets Renewals 	<ul style="list-style-type: none"> Granular Roadway Improvements
Regional Streets	<ul style="list-style-type: none"> Regional Street / Sidewalk O&M Regional Sidewalk and Curb Renewals Downtown Streets Regional Major Rehabilitation Works Regional Mill & Fill Regional Enhanced Renewal Program 	<ul style="list-style-type: none"> Regional Streets Improvements Regional Upgrades - Paved Shoulders Regional Upgrades - Accessibility Improvements New Transportation Facilities

Based on the pavement management system it is known that an annual investment of \$58 Million is needed to maintain an average Fair quality rating for local streets. Comparing this requirement with planned operating and capital investments identifies an unplanned additional annual need for between \$8 and \$22 Million (or \$123 Million over 10 years) to meet this service objective. The required spending distribution is shown in the following chart. Planned lifecycle management and service enhancement spending are denoted with blue and green bars, respectively; unplanned investment is shown in red.

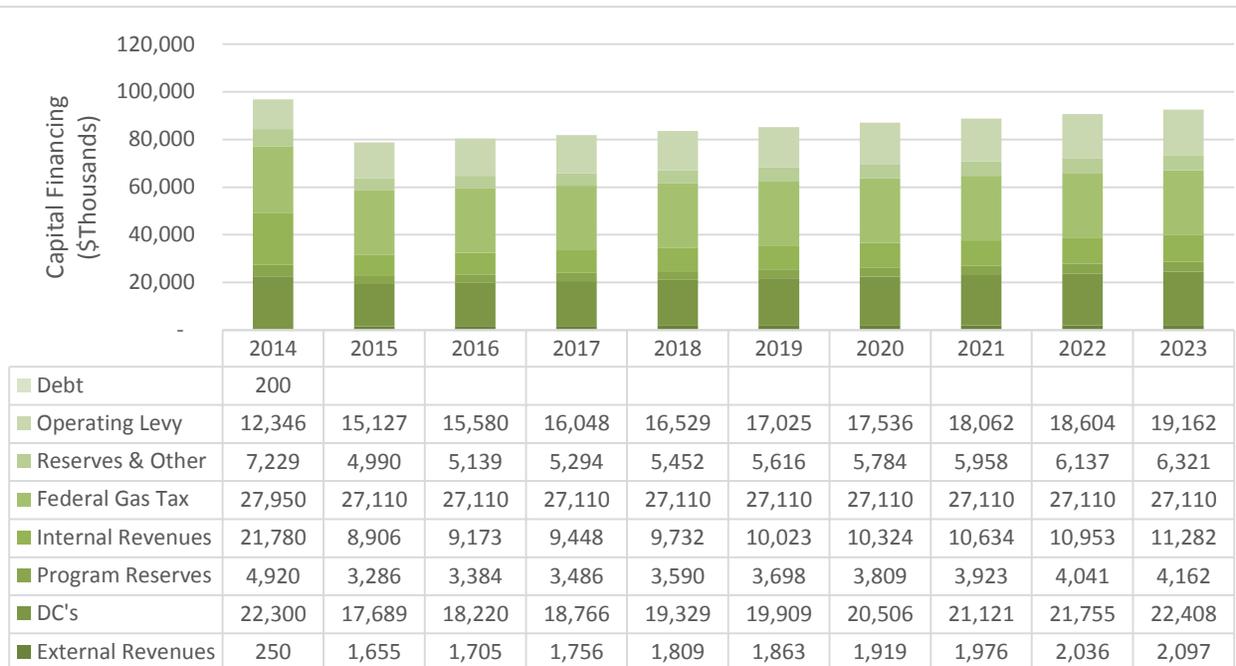


Revenue Forecast

This section details current and forecasted revenue streams available to fund investment requirements. Assumptions for revenue forecast should be clearly stated, and large revenue shifts should be explained.

Content Example

The projected investment and associated funding sources for Local Streets capital investment is summarized below. The values presented represent the approved budget for 2014 and forecasts for the period 2015-2023.



Funding Gap

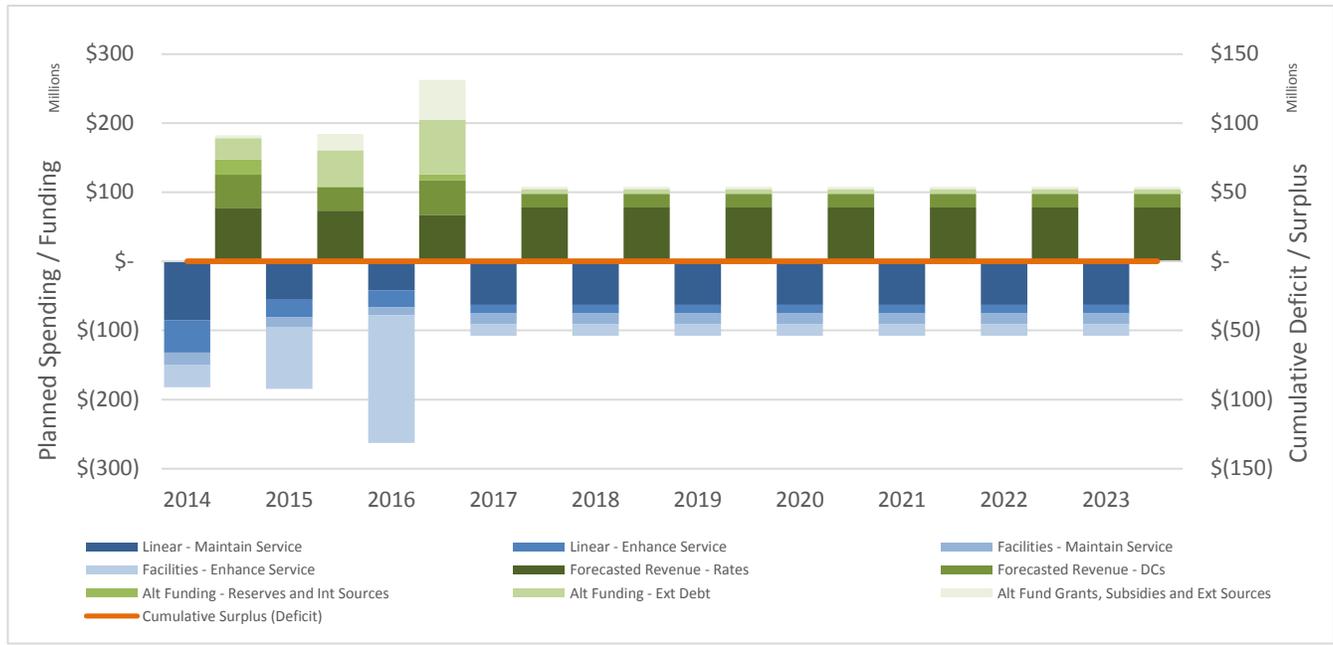
This section compares planned spending with available revenue to identify any unfunded investment requirements. A mature Asset Management Plan should be able to quantitatively identify the areas and magnitude of funding shortfalls and specific strategies for addressing these issues. Initially it is unlikely that this level of information will be available and business units will need to present a more qualitative assessment of issues and constraints. As the use of asset management evolves within the business unit, so too will the level of investment need information, allowing it to move toward quantitative assessment.

Based on this, the presentation of this section will vary, depending on whether or not the business unit was able to forecast its investment needs, or if it merely presented budgeted spending over the analysis period.

- Where needs are presented, then it is very likely that sufficient funding is unavailable to cover investment and a gap will exist. In this case the business unit should highlight unfunded areas and detail intended strategies for overcoming these deficits (i.e. where it will pursue alternative funding or reduce service provided).
- Where planned spending is used (i.e. budget documents are primary sources of information), investment will mirror funding, showing a net zero funding gap. In these cases the business unit should identify areas of constrained spending, qualitatively explain their respective service impacts, and highlight prospective available mitigation strategies.

Content Example

The following investment strategy highlights how planned Water business unit spending will be addressed. While review of available funding vs. planned investment shows a balanced capital budget, increased spending on expansion and upgrading of the Wastewater Treatment Plant will place significant financial pressure on the City, increasing reliance on Grant Programs and forcing the deferral of linear and facility works, risking system reliability and customer service impacts. Also, current investment in sewer and water distribution system rehabilitation and renewal activities are insufficient to keep up with deterioration resulting in reliability issues, particularly during extreme weather events. This, coupled with project deferrals needed to accommodate treatment plant spending have resulted in several high-profile failures and negative press for the Department.



Alternative Funding Strategies

This section should highlight the business unit’s strategies for overcoming identified quantitative or qualitative funding gaps. While the identification of additional funding is one option, various forms of alternative delivery, service reduction, or outright suspension of service could also be viable solutions.

Note that it is not the intention of this document to identify and analyze all available options, but merely to report on the planned actions, based on properly supported external analysis. Where this analysis has yet to be conducted then the business unit can provide a timeline for this assessment and highlight potential options under consideration.

SECTION 7

Improvement & Monitoring Plan

This section outlines the improvement and monitoring program that will be implemented to enhance future revisions of the Asset Management Plan. This will include highlights on planned asset management improvement initiatives, along with a monitoring strategy aimed at tracking the business unit's progress over time.

AM Monitoring and Review

This section highlights planned actions to review asset management progress within the business unit, along with key measures used in tracking its adoption and use of business unit and corporate practices and tools.

Example Content

Department asset management activities will be reviewed annually, both internally and in conjunction with a broader review of the corporate asset management program. Internal review will consist of a review of AM program metrics to track actual vs. planned progress, and consultation with Department AM stakeholders to assess the completeness and effectiveness of key practices and tools. A summary report will be presented to the Department Management Team, and consolidated and presented in future versions of this Plan.

The corporate asset management program will be reviewed annually, by reviewing metrics and consulting with all business units. A summary report will be developed and presented to the Corporate Asset Management Steering Team to ensure the program's continued suitability, adequacy, and effectiveness. Feedback will be collected and used to shape the overall corporate asset management development plan and City Asset Management Strategy.

Type	Measure	Target	Frequency	Data Source
Finance	Value of capital \$ deferred beyond preferred point in time % of business cases over \$500k based on whole life costs (WLC) Value of capital \$ savings achieved Value of opex \$ reductions achieved			
Customer	Citizen survey outcome on service satisfaction % of LOS measures with baseline data % of LOS measures with target set Customer LOS vs. target			
Internal Process	% of opex budget (by activity, \$, service) subject to review Number of activities reviewed for ASD potential % of operating functions with SOPs % of asset base with up-to-date risk assessments % of projects in CIP with robust business cases % of capital program has gone through the MCP process % of business cases with recommending opex outcome \$ value of spend-to-save opportunities identified			
Learning & Growth	% of target employees going through AM training % of job roles going through AM competency assessment Staff feedback on training 6 months after completion of training % of PDEs with AM-related outcomes % of PDEs with AM-related outcomes successfully achieved			

The following metrics will be used to track AM program adoption and effectiveness:

Asset Management Improvement Plan

This section highlights activities planned to enhance asset management capacity within the business unit.

Example Content

This Asset Management Plan sets out a strategic framework for managing the City's Water, Wastewater and Stormwater infrastructure to effectively meet current and future service requirements. As asset management practices continue to evolve, so too will the completeness and value of this Plan in guiding investment in these assets. The following planned improvements highlight the Department's continued commitment to the sustainable management of its core infrastructure to support the delivery of safe, reliable

Action	Responsibility	Resources	Timeline
1 Further development and implementation of WWD's LOS framework - Work will continue on implementing a comprehensive framework of customer and corporate indicators to facilitate the business unit's transition to a service-oriented investment planning approach.	WWD AM Coordinator	Internal	Q4, 2014
2 Refresh conveyance system AM systems and tools – Work on the planned update of conveyance system condition assessment and planning tools will proceed in 2014. In addition to renewing aging technology, the work will improve the tracking and management of asset performance information, provide asset risk analysis capabilities, and enhance the identification and forecasting of investment needs. Tools will be configured to align with the support the corporate investment planning process, significantly reducing the level of effort needed to support this work.	WWD IT, WWD AM	Internal / Contracted	Q3, 2014

and effective municipal services to Winnipeggers.

Appendices

The AMP Appendices should be structured to house details supporting information presented in the body of the AMP. Content will vary from business unit to business unit, but as a minimum should contain the following:

- Supporting Strategic Documents – Links to (or copies of) supporting / supported strategic documents referenced in Section 1 of the AMP, including strategic and business plans, policies, and masterplans.
- State of Infrastructure Report – Detailed information on the asset base managed by the business unit, including inventory data, condition and levels of service, replacement and book value, average remaining life, etc. for key assets. This can be in the form of a tailored summary supporting the information presented in the AMP, or a business unit excerpt from a broader public-facing State of Infrastructure Report, published by the City.
- Detailed Capital and Operating Expenditure Forecasts – Details on the capital and operating expenditures to be incurred by the service area in order to maintain, replace and enhance the existing and growing asset base. Information should be aligned to support that presented in the body of the AMP.
- State of Asset Management Report – Outcomes of the latest AM Program Review, as detailed in Section 6 of the AMP. Information should include outcomes from the latest CAMRA assessment, along with agreed metrics for tracking the progression of asset management within the business unit.
- Asset Management Improvement Plan - Further information on the improvement activates presented in the main report, including expected outcomes and required investment, and supporting business cases if they are available.