



# Municipality of Lakeshore

## O. Reg 588 Compliant 2024/2025 Asset Management Plan

Project Proposal

Date: March 26<sup>th</sup>, 2024

### **Submitted By:**

PSD Citywide Inc.

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## Statement of Confidentiality

This document has been prepared specifically for the Client.

PSD Citywide shall treat as confidential all information obtained by PSD Citywide for and from the Client as well as all information compiled by PSD Citywide under this Agreement for the Client, including without limitation: business and marketing information, technical data, programs, source codes and other software, plans and projections.

This proposal and all of its associated pricing shall remain valid until **May 30th 2024**.

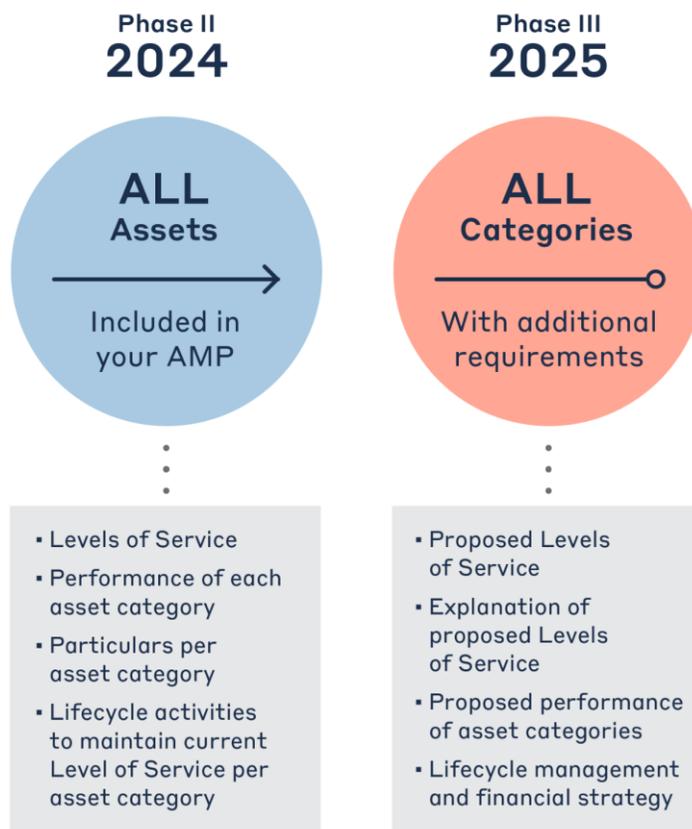
## Project Deliverables

This document contains a high-level project plan for the Municipality of Lakeshore for the purpose of developing and delivering an Asset Management Plan. The proposed schedule, requirements and scope presented in this document are to be refined and updated as client requirements, business and operational goals, and constraints are gathered throughout the project. The Asset Management Plan (AMP) will be composed with the following components at a minimum:

- Executive Summary
- Introduction
- State of Local Infrastructure
- Asset Management Strategy
- Levels of Service
- Financial Strategy

### 1. O. Reg 588/17 Compliant Asset Management Plan

The asset management plan will become a document that officials, staff, and residents can use to guide their decision-making and develop an educated perspective on managing a municipality's assets. Ontario Regulation 588/17 requires municipalities to develop an asset management plan in three stages:



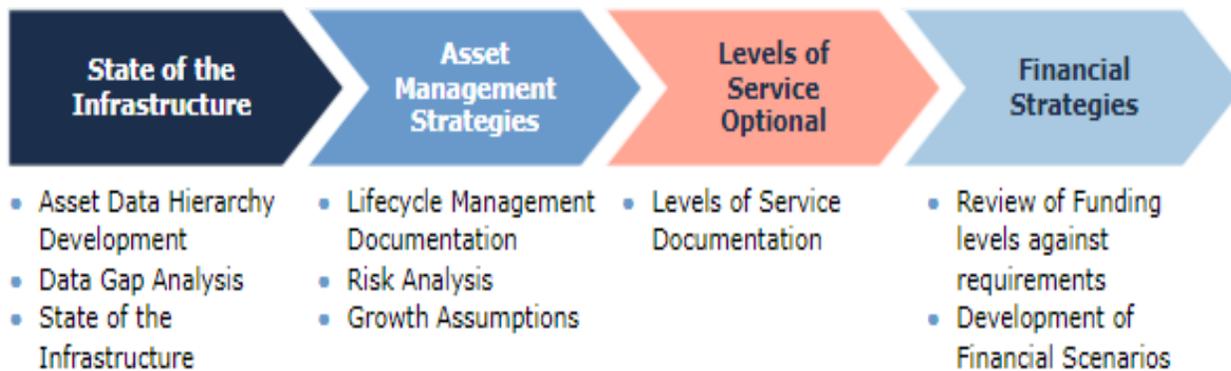
PSD Citywide’s work for the The Municipality of Lakeshore will complete preparation for **Phase 2 and Phase 3**, in order to comply with the **2024 and 2025 requirements of AMP development**.

## Asset Management Workshops and Interviews

The development of the AMP requires input from stakeholders across all departments to leverage existing knowledge, understand current practices, and review insights. At key intervals over the course of the project PSD Citywide will lead workshops and/or interviews with relevant staff to ensure all project requirements have been satisfied. The number of workshops and the content covered will be determined during the initial project planning stage in collaboration between PSD Citywide and key project stakeholders but may change as project requirements become better understood. This will depend on the maturity of data and processes currently and the availability of studies and reports. The budget for these engagements includes prep time, workshop design, and delivery.

## Project Scope

There are 4 key sections in the asset management plan:



The following tables identify the content that will be included in the AMP for each asset category:

Asset Category	Project Requirements			
	State of Infrastructure	AM Strategies	Levels of Service	Financial Strategies
Road Network	Yes	Yes	Yes	Yes
Bridges & Culverts	Yes	Yes	Yes	Yes
Storm	Yes	Yes	Yes	Yes
Water	Yes	Yes	Yes	Yes
Facilities	Yes	Yes	Yes	Yes
Land Improvements/Parks	Yes	Yes	Yes	Yes
Machinery & Equipment	Yes	Yes	Yes	Yes

Vehicles		Yes	Yes	Yes	Yes
Topic	In Scope	Out of Scope			
<b>Inventory Analysis &amp; State of the Infrastructure</b>	<ul style="list-style-type: none"> <li>✓ Develop customized AMP classification structure (data hierarchy)</li> <li>✓ Complete a data gap analysis</li> <li>✓ Review and adjust Useful Lives and Replacement Costs</li> <li>✓ Inventory duplication review &amp; identification of excluded assets</li> <li>✓ Upload available assessed condition data (e.g. Road Needs Study) that aligns with current asset inventory structure only</li> </ul>	<ul style="list-style-type: none"> <li>✗ Financial data adjustments (disposals, betterments, cost balancing)</li> <li>✗ Inventory reconciliation or merging data between two datasets (e.g. TCA vs. GIS)</li> <li>✗ Create links to GIS dataset</li> <li>✗ Disaggregate pooled inventory data</li> <li>✗ Complete on-site condition assessments</li> </ul>			
<b>AM Strategies (Lifecycle)</b>	<ul style="list-style-type: none"> <li>✓ Document current lifecycle and condition assessment strategies (all assets)</li> <li>✓ Create lifecycle model(s) for Roads that identify current or proposed management strategies</li> <li>✓ Lifecycle activities for bridges and structural culverts based on recommended activities in OSIM reports</li> </ul>	<ul style="list-style-type: none"> <li>✗ Identify optimal lifecycle strategies or make recommendations on best practices</li> </ul>			
<b>AM Strategies (Risk)</b>	<ul style="list-style-type: none"> <li>✓ Basic risk models developed for all asset categories (1-2 Consequence of Failure Metrics; 1-2 Probability of Failure Metrics) based on available data</li> <li>✓ Development of risk matrices</li> <li>✓ Identification of risks to infrastructure programs in general</li> </ul>	<ul style="list-style-type: none"> <li>✗ Development of risk mitigation strategies</li> </ul>			
<b>AM Strategies (Growth)</b>	<ul style="list-style-type: none"> <li>✓ Identification of growth assumptions based on the best available data</li> <li>✓ Review of expected impacts of growth on asset management planning</li> </ul>	<ul style="list-style-type: none"> <li>✗ Growth forecasting</li> </ul>			
<b>Levels of Service</b>	<ul style="list-style-type: none"> <li>✓ Identification of current and proposed level of service (O.Reg 588/17 metrics)</li> <li>✓ Selection of up to 1 -3 additional key performance measures per asset category</li> </ul>	<ul style="list-style-type: none"> <li>✗ Review of historical data and/or trend analysis</li> </ul>			
<b>Financial Strategy</b>	<ul style="list-style-type: none"> <li>✓ Review of historical approach to capital funding allocation and debt financing</li> <li>✓ Development of phased-in financial strategy to meet capital lifecycle requirements (5-20 Years)</li> </ul>	<ul style="list-style-type: none"> <li>✗ Review of operating costs</li> <li>✗ Integration of growth costs</li> <li>✗ Development of reserve funding strategy</li> </ul>			

<b>Draft/Report</b>	<ul style="list-style-type: none"> <li>✓ 2 draft revision cycles</li> <li>✓ Final presentation to Council as required</li> </ul>	
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## AMP Development

### Phase 1: Document Review & Project Planning

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To ensure alignment between the AMP and the municipality’s current strategic objectives, the development process will begin with a review of any previous AMPs and related infrastructure documentation, including strategic plans, AM policies, and other relevant studies.

PSD Citywide will then host a kickoff meeting with project stakeholders to establish a working group made up of designated municipal staff with assigned roles and responsibilities, and then work with staff to fully understand the project goals and objectives of the municipality. Our approach and methodologies implemented in developing the AMP will enable strategic asset management decision-making, and we will ensure that all training material and the content of the workshops are designed specifically for the municipality. Based on PSD Citywide’s review of provided documentation and the project kick-off meeting, a tailored project plan will be designed to ensure that the final deliverable meets all the identified goals and objectives.

### Phase 2: Inventory Analysis & State of the Infrastructure

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#### 1. Asset Data Hierarchy Development

In addition to portfolio-level analysis, the AMP will also include detailed analysis at a network- or system-level. To enable this analysis, an asset data hierarchy will be developed which sorts assets into service areas or other functional categories. Our process will include a review of past AMPs, recent budget documents, as well as the municipality’s current asset inventory to determine an optimal data structure. An example of a three-tier asset hierarchy can be found below.

Service Area	Asset Category	Asset Type
<b>Infrastructure Services</b>	<b>Engineering Services</b>	Roads
		Bridges & Culverts
		Stormwater
	<b>Transportation</b>	Traffic
		Signages
		Street Lighting
	<b>Roads &amp; Fleet</b>	Machinery & Equipment

		Vehicles
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PSD Citywide will provide multiple options for the municipality to review and confirm, ensuring that the AMP aligns closely with other strategic documents.

## 2. Data Gap Analysis & Refinement

Asset management planning is only as strong as the data and information that it is based on. Each asset can have anywhere from several to dozens of attributes—from material type and replacement costs to useful life and condition information. With tens of thousands of assets across the portfolio, there are many opportunities for errors or inconsistencies to be introduced. For that reason, we spend a considerable portion of our project reviewing and refining key infrastructure data. A detailed data gap analysis will be performed across all asset categories to determine where additional data is needed and where existing data should be reviewed for accuracy. The following table provides an example of the data fields that are typically reviewed:

Data Fields	Completeness (%)	# of Assets with Gaps	Notes for Review
Quantity	95%	325	Quantities are present for almost all assets. Some anomalies require further review as identified in a separate worksheet.
In-Service Date	100%	0	No further review required
EUL	8%	6250	All assets from the provided GIS listing will require a Lifecycle EUL to be assigned.
Replacement Cost	0%	6489	Assets that have historical costs will use appropriate inflation measures to determine replacement cost. For core linear assets a unit cost template will be provided for review.
Assessed Condition	0%	6489	No condition data available in Citywide; please provide if available. Age-based estimates of condition will be used for all assets without assessed condition.

The process of data collection and analysis used by PSD Citywide is designed to increase confidence in the asset data itself, and the final project components that rely on this data. As data has such widespread implications across the asset management program, PSD Citywide will work with the municipality to address gaps and increase confidence in the accuracy and reliability of asset data.

While staff will be given time to review and close some data gaps, more involved data refinements (e.g. condition assessments, data disaggregation, new inventory development) will be recommended for future reference. PSD Citywide can provide some guidance on average replacement costs and EULs using data from similar-sized municipalities or available benchmarking data if required.

## 3. State of the Infrastructure

The State of the Infrastructure (SOTI) is a key element of our asset management plans. It includes data and information on each asset class, including inventory, replacement cost, asset condition, service life remaining, average age, and capital needs forecasts.

The analysis within the SOTI is only as reliable as the asset data and information that it is provided. Any concerns and assumptions with the accuracy and/or reliability of this data will be clearly identified in the report. Additional recommendations will be developed to address identified concerns. The SOTI will include portfolio-level analysis as well as network or system-level analysis in the following areas:

### Asset Inventory & Replacement Cost

All the analysis included in the AMP is a product of the best available data on existing municipal infrastructure assets. From the provided asset inventory, we will develop a simplified overview of the scope and quantity of assets that the municipality owns to provide municipal services. This section will answer two questions in particular:

- What do we own?
- How much is it worth?

Determining asset replacement costs is one of the first steps in the development of a long-term capital forecast. There are several methods that can be employed to determine these costs including:

- **Cost Inflation** – inflation of the asset cost recorded at the time it was acquired to today’s value using an available index (CPI or BCPI)
- **Replacement Unit Costs** – A unit-based or asset-specific replacement cost determined through a review of recent contracts, reports, and/or staff estimates.

We will work closely with staff to review and evaluate asset replacement costs to ensure that costing estimates and capital forecasts are based on the best available data. Where possible we will cross-reference with available industry costing data as well as internal datasets developed during our extensive working relationship with clients across North America of various sizes.

### Asset Condition

Asset management planning should be based on the best available data on asset condition. Determining the current condition of assets will inform lifecycle management strategies, condition assessment strategies, and the development of long-term capital forecasts. All assets will be given a condition rating based on the best available data from **Very Good to Very Poor** as per the following industry-standard rating criteria identified in the Canadian Infrastructure Report Card.

Condition	Description	Criteria
<b>Very Good</b>	<b>Fit for the future</b>	Well maintained, good condition, new or recently rehabilitated
<b>Good</b>	<b>Adequate for now</b>	Acceptable, generally approaching mid-stage of expected service life
<b>Fair</b>	<b>Requires attention</b>	Signs of deterioration, some elements exhibit significant deficiencies
<b>Poor</b>	<b>Increasing potential of affecting service</b>	Approaching end of service life, condition below standard, large portion of system exhibits significant deterioration
<b>Very Poor</b>	<b>Unfit for sustained</b>	Near or beyond expected service life, widespread signs of

	<b>service</b>	advanced deterioration, some assets may be unusable
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To allow for a standard and comparable condition rating across all assets, we may need to adapt asset-specific condition assessment criteria to fit into the above categorization. Common condition rating criteria includes:

- Pavement Condition Index (PCI) for paved roads
- Bridge Condition Index (BCI) for bridges and structural culverts
- Facilities Condition Index (FCI) for buildings and facilities
- PACP Ratings for pipes

Based on available condition data we will be able to identify the current condition of infrastructure. Our findings will inform recommendations on the development and implementation of a portfolio-wide condition assessment program to inform long-term planning.

**Average Age & Service Life Remaining**

Using asset In-Service Dates and Estimated Useful Lives we will be able to identify the average age of infrastructure as well as the years of service life remaining to inform both short- and long-term planning.

Measuring this data across all asset categories will allow us to develop an annual forecast of asset replacement requirements. It will also inform our recommendations on the implementation of lifecycle management and condition assessment strategies.

**Phase 3: Asset Management Strategies**

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**1. Lifecycle Management Strategies**

The condition and/or performance of infrastructure assets will deteriorate over time. This process is affected by a range of factors including an asset’s physical characteristics, location, utilization, maintenance history and environment. Asset deterioration may be characterized by increased cost, risk, and even service disruption. To ensure that municipal assets are performing as expected and meeting the needs of the community, it is important to establish a strategy to proactively manage asset deterioration. Effective lifecycle management can extend the service life of assets and ensure that assets continue to meet service and performance requirements at the lowest total cost of ownership. The following graphic provides an example of the deterioration of an asset’s condition over its lifecycle and how strategic lifecycle management can extend service life while reducing total costs.

As part of the AMP development process, we will work with key staff to document the municipality’s current approach to lifecycle management strategies. Additionally, we’ll be able to identify optional lifecycle activities (e.g. maintenance, rehabilitation, and replacement) that the municipality may consider to reduce cost and risk. PSD Citywide will not build lifecycle models at this stage, just documenting. If lifecycle models will be built, please speak with your Account Manager or Client Support Representative.

**2. Risk Analysis**

The Risk Analysis in the AMP will comprise documentation of risks to infrastructure programs at both a corporate and network-level. It will also include an evaluation of risk and criticality based on condition and asset attribute data currently available in the municipality’s inventory. Asset risk evaluation considers both the probability of failure (PoF) and the consequence of failure (CoF).



Risk ratings can be used to:

- Assist with the prioritization of resources
- Prioritize and streamline inspection and condition assessment programs
- Prioritize and optimize operations and maintenance programs
- Prioritize and optimize capital budget processes and program delivery
- Ensure that available money and resources are applied to the right asset at the right time

A risk matrix is a useful tool to visualize risk across a group of assets. The AMP will include a risk matrix for each asset category similar to the example below:

Consequence	1 Rare		2 Unlikely		3 Possible		4 Likely		5 Almost Certain	
	1	2	1	2	1	2	1	2	1	2
5 Severe	155.00 m \$261,795	- \$0	461.50 m \$935,461	- \$0	570.80 m \$1,025,935					
4 Major	1,881.60 m \$1,828,986	480.60 m \$406,429	723.00 m \$631,444	18.10 m \$16,815	302.46 m \$300,717					
3 Moderate	2,056.30 m \$1,669,479	788.40 m \$553,633	618.00 m \$464,836	39.60 m \$31,442	945.90 m \$713,604					
2 Minor	3,541.40 m \$2,147,557	2,887.00 m \$1,727,721	929.50 m \$556,567	2,124.10 m \$1,276,959	6,730.40 m \$4,026,603					
1 Insignificant	1,640.98 m \$1,066,646	3,974.25 m \$2,348,782	473.48 m \$279,827	321.50 m \$190,007	10,240.27 m \$6,052,000					

### 3. Growth Assumptions

Understanding the key drivers of growth and demand will allow the municipality to more effectively plan for new infrastructure, and the upgrade or disposal of existing infrastructure. Increases or decreases in demand can affect what assets are needed and what level of service meets the needs of the community. PSD Citywide will work with the client to document some assumptions and key projects related to community growth, which in result, will greatly affect their asset management planning.

### Phase 4: Levels of Service

Municipalities own and maintain assets with the end goal of providing a diverse range of high-quality services to the community. Through consultation with community stakeholders and often the development of strategic planning documents, a level of service standard is established.

These levels of service standards or objectives are key drivers in asset management planning and decision-making. A regular evaluation of the level of service is required to ensure that organizational objectives align with asset management outcomes. Levels of Service are used:

- To inform customers of the proposed type and level of service to be offered
- To identify the costs and benefits of the services offered
- To assess suitability, affordability and equity of the services offered
- As a measure of the effectiveness of the asset management plan

There are two levels of evaluation related to LOS:

1. **Current Level of Service** – What level of service are we providing today?
2. **Proposed Level of Service** – What level of service do we want to provide in the future?

This AMP will focus on the measurement of current and proposed levels of service. This requires the identification of key performance indicators that can be reliably and consistently measured. The differentiation between two types of indicators is described below:

1. **Community Level of Service** – Qualitative descriptions of the service provided (high-level)
2. **Technical Level of Service** – Quantitative measures of the service provided

We will work with the Click or tap here to enter text. to collect the required technical and community level of service measures. Additionally, we will identify supplementary performance measures that can help decision-makers to better understand the current level of service provided by the infrastructure in each asset category. Below is a list of the technical level of service metrics:

Asset Category	Technical LOS
<b>Water Assets</b>	Percentage of properties connected to the municipal water system.
	Percentage of properties where fire flow is available.
	The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system.
	The number of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system.
<b>Wastewater Assets</b>	Percentage of properties connected to the municipal wastewater system.
	The number of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system.
	The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system.
	The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.
<b>Stormwater Assets</b>	Percentage of properties in municipalities resilient to a 100-year storm.
	Percentage of the municipal stormwater management system resilient to a 5-year storm.
<b>Roads</b>	Number of lane-kilometers of each of arterial roads, collector roads and local roads as a proportion of square kilometers of land area of the municipality.
	For paved roads in the municipality, the average pavement condition index value.
	For unpaved roads in the municipality, the average surface condition (e.g. excellent, good, fair or poor).

<b>Bridges &amp; Culverts</b>	Percentage of bridges in the municipality with loading or dimensional restrictions.
	For bridges in the municipality, the average bridge condition index value.
	For structural culverts in the municipality, the average bridge condition index value.
<b>Facilities</b>	Gross square footage of all buildings owned and leased
	O&M Cost per Percentage of buildings and facilities
	Percentage of buildings inspected
<b>Fleet</b>	Average percentage of time a vehicle is in service and capable of performing its primary function
	O&M cost per vehicle

## Phase 5: Financial Strategies

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### 1. Gather & Review Financial Data

Once the SOTI and AM Strategies have been confirmed, the development of the financial strategy can begin. We'll start with gathering and reviewing financial data provided by the municipality including:

- Revenues
- Reserves
- Debt
- Project Costs

A review of key financial data over the past three years will allow us to better understand the historical availability of infrastructure funding and identify sustainable revenue sources. Our Financial Data Analysts will complete a gap analysis and work with staff to gather, format and analyze all required data.

### 2. Financial Analysis & Scenarios

Assets will be divided between tax-funded and rate-funded asset categories based on their primary funding source. Where possible, our financial analysis will consider the cost requirements of multiple lifecycle management strategies. For some asset categories, we may only use an end-of-life replacement strategy. For others, where a proactive maintenance/rehabilitation strategy has been considered, we will be able to identify multiple sets of cost requirements for comparison. This will depend on the municipality's current lifecycle management strategies and any work completed during the AM Strategies stage of the project. With an in-depth understanding of current infrastructure funding levels and the availability of sustainable revenue sources, we will be able to compare the financial data against identified cost requirements to determine the extent of the funding shortfall. Once the funding shortfall is identified, we will develop multiple scenarios to be considered. Where necessary, this will include phased-in strategies over a period of up to 20 years. Our analysis will conclude with a recommended strategy to eliminate the infrastructure deficit and reach a sustainable level of infrastructure investment to maintain current levels of service.

## Phase 6: AMP Draft Review Process and Document Finalization

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The development and approval of a comprehensive AMP is a substantial task. The AMP itself is a complex, lengthy, and multi-faceted document. It should be reviewed by all relevant internal stakeholders. We complete two rounds of revisions to the document, and adhere to the following approach in ensuring the document is fully vetted prior to project close-out:

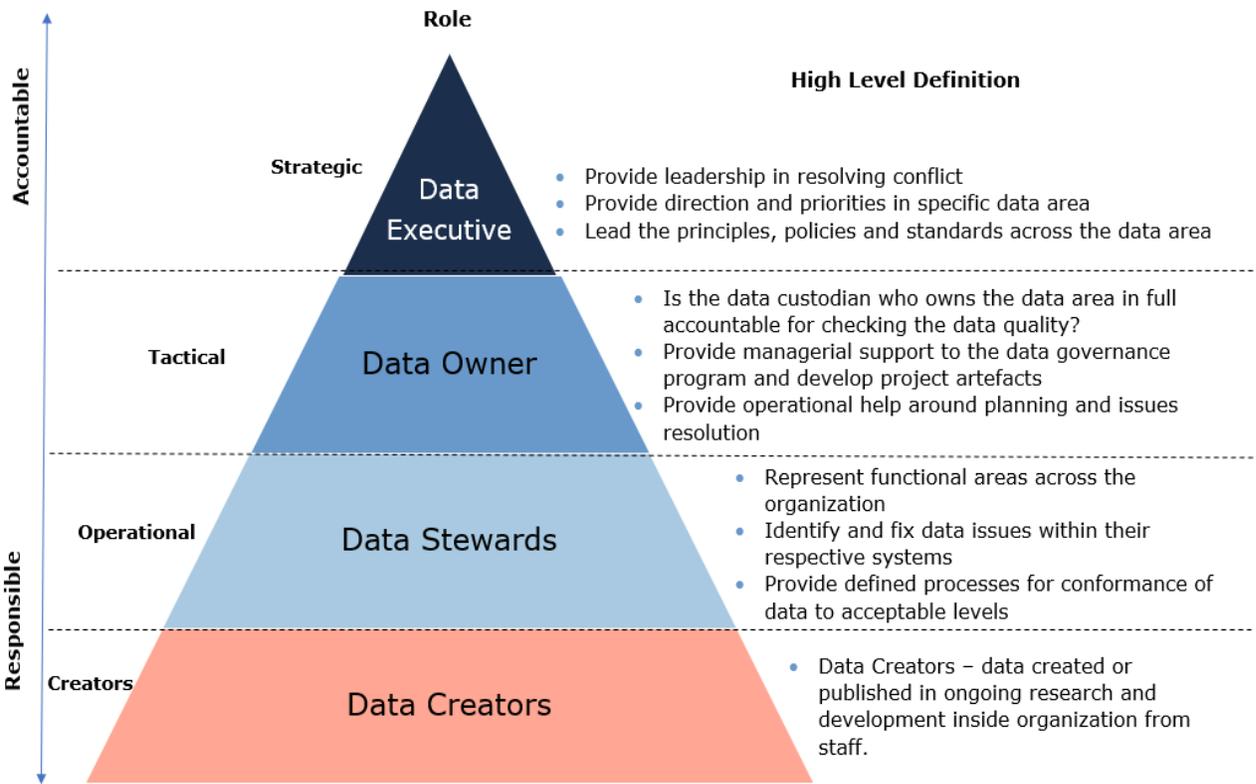
- **Draft 1 Submission:** After all necessary data is collected and analyzed, we will provide the Project Lead with the first full draft of the asset management plan.
- **Client Review of Draft 1:** Upon submission of Draft 1, and at the discretion of the Project Lead, the AMP should be circulated to all internal stakeholders for review and feedback. To ensure the process is efficient, this feedback must be consolidated by Project Lead prior to forwarding to PSD Citywide for revisions.
- **Revisions to Draft 1:** PSD Citywide will make revisions as necessary to Draft 1 and submit Draft 2 to Project Lead.
- **Client Review of Draft 2:** Upon submission of Draft 2, and at the discretion of the Project Lead, the AMP should be circulated to all internal stakeholders for review and feedback. As with revisions to Draft 1, any further feedback must be consolidated by Project Lead prior to forwarding to PSD Citywide for revisions.
- **Document Finalization:** Upon receiving further feedback on Draft 2, PSD Citywide will revise the document and finalize it for submission to Project Lead.

## 2. Data Governance Policy

A Data Governance Policy is a collection of principles that describe the rules to control the integrity, security, quality and usage of asset data during its lifecycle. The policy also defines the roles and responsibilities of Municipal staff, consultants or third parties that access data, update data or dispose of data with municipal assets.

The purpose is to define:

- Roles and responsibilities for different data types and usage types, cases and/or situations, and to establish clear lines of accountability.
- Ensure that the municipality complies with regulations and standards.
- Ensure that data is effectively documented within the processes associated with accessing, retrieving, exchanging, reporting and managing data.



## Project Schedule

The estimated duration of this project is **12 months**. The detailed project schedule and Gantt chart will be supplied after the kick-off meeting and will be reviewed and approved in phases as the project progresses. The duration of the project is dependent on multiple factors including client availability as well as data activities. Note that Client time and resources will be required regularly throughout the project. It is expected that the Client will provide data and additional inputs for each stage as well as review and provide feedback on the deliverable for each stage.

## Project Communication

Due to the size and scope of the project, clear and efficient communications between the Client and PSD Citywide is vital to project success. In the kick-off meeting, the main point of contact for PSD Citywide and the Client will be decided upon and the Client will be introduced to PSD Citywide's Project Management Tool, Mavenlink, in which clients can have access to view the progress of the project. All high-level client communications, including project progress updates, scheduling future meetings/workshops and sending of data should be done between these individuals unless stated otherwise throughout the project. In addition, every two weeks starting with the kick-off meeting, the PSD Citywide Project Manager will provide a project status update that includes progress of tasks completed to date and the timelines and milestones of activities moving forward. Alternatively, the client can check project progress, statuses, and updates through Mavenlink.

## Project Budget

Professional Services	
Service	Amount
O. Reg 588/17 Compliant Asset Management Plan meeting the 2025 requirements and also includes compliance with the 2024 regulations	\$89,600.00
Training on best practice Asset Management and how to run the AMP inside Citywide	\$4,800.00
<b>Total</b>	<b>\$94,400.00</b>

**\*\*\* If the client wishes for PSD Citywide to produce an AODA compliant document (for the website), it will be an additional \$2,500 charge for a document up to 150 pages.**