

Town of Whitby

# Municipal Asset Management Plan

ROAD RIGHT-OF-WAY. PARKS. FACILITIES. LIBRARY. MIS. FIRE. FLEET.



OVERALL ASSET HEALTH  
GRADE

B

December 2017



OVERALL FINANCIAL  
CAPACITY GRADE

C



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# Executive Summary

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Infrastructure is directly linked to the economic, social and environmental advancement of a community. Municipalities own and manage nearly 60% of the public infrastructure stock in Canada.

The Town of Whitby's infrastructure portfolio comprises seven distinct Service Areas: Road Right-of-Way, Facilities, Fire, Municipal Information Systems (MIS) Equipment, Parks, Library Resource and Fleet. Together, these assets have a total valuation of approximately \$2 billion.

Strategic asset management is critical in extracting the highest total value from public assets at the lowest lifecycle cost and taxpayer impacts. In this regard, the Town of Whitby has developed a Service Area Asset Management Plan (SAAMP) for each of its seven asset categories. This Municipal Asset Management Plan (MAMP) aggregates and summarizes key data from each SAAMP. The MAMP provides a high-level overview of:

- (i) The State of Existing Infrastructure
- (ii) Expected Levels of Service – including Key Performance indicators (KPIs)
- (iii) Risk Matrices to assist with prioritizing of capital projects
- (iv) Financial Needs
- (v) Recommendations to continue to develop an advanced asset management program.

Based on replacement cost and a blend of age-based data and observed data, the vast majority 94.6%, of Whitby's assets are in Fair to Very Good condition. However, 5.4% of assets fall into the Poor or Very Poor condition classes and are worth \$88.5 million and \$17.5 million respectively. As such, an **Overall Asset Health Grade of 'B'** has been assigned to the municipality.

The Asset Health Grade is a snapshot in time (December 31, 2016) – and does not look at future asset assumptions or future funding needs to continue to adequately maintain our assets. It is also important to note that the Asset Health Grade is an average of all the Service Area's assets, and some individual assets have a condition higher or lower than what the average grade indicates.

**While current asset health is an important indicator of the Town's asset management maturity, equally important is the municipality's ability to fund the long-term lifecycle needs of each of its Service Areas.** The MAMP has identified the funding needs for the short, medium and long-term planning horizons – ranging from 5 to 100 years.

**The average annual investment requirement in total for all seven Service Areas over a 50-year planning horizon is \$36,706,429. The average annual revenue currently allocated to these assets for capital purposes is \$22,917,313 leaving an**

**annual funding deficit/gap of \$13,789,116. Collectively, the seven Service Areas are currently funded at 62% of this long-term financial planning horizon.** While the annual requirements of the short-term are fully funded, an **Overall Financial Sustainability Grade of “C”** has been given to the municipality due to the medium and long-term financial gaps.

The MAMP is a living document and will continually be updated and built upon. This version is considered Phase I. To ensure that future phases are meaningful documents that support the Town’s ability to continue to build a strong asset management program, the following items are recommended:

1. To continue to develop robust condition assessment programs for all asset categories on a pre-determined schedule to keep data current and accurate.
2. To continually research new technologies/available preventative maintenance and rehabilitation strategies to minimize life cycle costs.
3. To review the high priority projects identified within the MAMP and incorporate them into the Capital Budget/Forecast on an annual basis.
4. To review corporate asset management software needs and implement a solution to provide corporate efficiencies.
5. To update the MAMP and report to Council on an annual basis.

In addition, future phases of the MAMP should include:

#### Phase II (2018)

6. To undertake the development of a long-term financial strategy, and incorporate the findings into the MAMP.
7. To undertake asset growth projections via the Development Charges Study Update, and incorporate the findings into the MAMP.

#### Phase III (2019-2020)

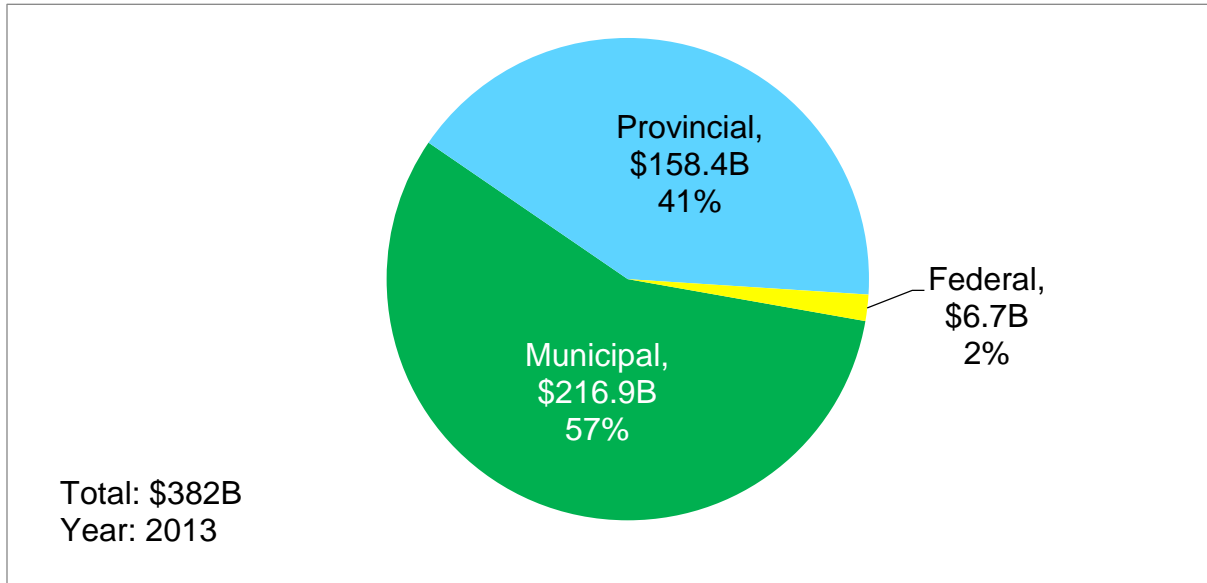
8. To incorporate all associated operating costs and activities and incorporate the finding into the MAMP



# 1. Introduction

Ontario's municipalities own more of the province's infrastructure assets than both the provincial and federal government combined. Across Canada, the municipal share of public infrastructure increased from 22% in 1955 to nearly 60% in 2013.

Figure 1-1 Distribution of Net Stock of Core Public Infrastructure

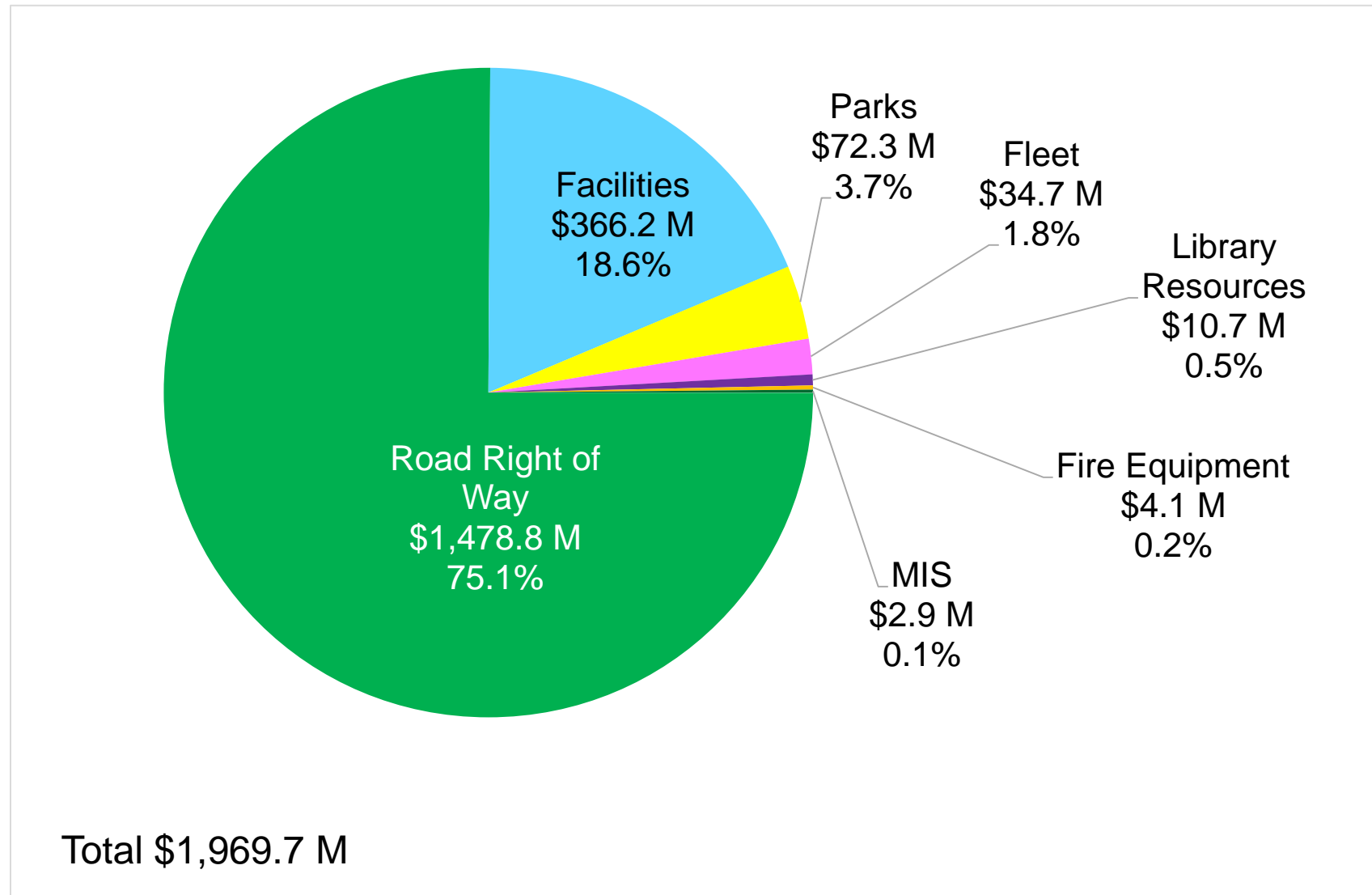


The asset portfolios managed by Ontario's municipalities are also highly diverse. The Town of Whitby owns approximately \$2 billion of these public assets in seven distinct Service Areas:

1. Road Right-of-Way
2. Parks
3. Facilities
4. Fleet
5. Library Resources
6. Fire
7. MIS Equipment

Figure 1-2 illustrates the breakdown of the Town's asset portfolio by Service Area.

Figure 1-2 Asset Portfolio by Service Area – Based on 2015 Replacement Value





Whitby relies on these assets to provide residents, businesses, employees and visitors with safe access to important services, such as transportation, recreation, culture, economic development and much more. As such, it is critical that the Town manage these assets by making the right decisions, at the right time, for the right reasons, and for the right costs.

This Municipal Asset Management Plan (MAMP) will assist the municipality in this pursuit of judicious asset management for its seven service areas.

## **1.1 What is Asset Management?**

Asset Management (AM) can be best defined as an integrated business approach within an organization that minimizes the lifecycle costs of owning, operating, and maintaining assets, at an acceptable level of risk, while continuously delivering expected levels of service for present and future customers.

AM includes the planning, design, construction, operation and maintenance of infrastructure used to provide services. Infrastructure needs can be prioritized over time by utilizing AM processes, while also ensuring timely investments to minimize repair and rehabilitation costs and maintain municipal assets.

Key questions municipalities must ask themselves today as they develop their AMPs and programs are the following:

- What is the asset worth?
- What is the asset's condition and expected remaining service life?
- What is the level of service expectation, and what needs to be done?
- When do you need to do the preventative maintenance, rehabilitation, or replacement?
- How much will the remedial works cost and what is the acceptable level of risk(s)?
- What are the overall life cycle needs/costs?
- What are the long-term sustainable financing needs?

## **1.2 Goals of the Municipality**

The 2014-18 Goals of Whitby Council lists specific objectives that contribute to the vision of an inclusive, thriving and sustainable community. Asset Management is related to four of the goals:

3. To continue the Whitby tradition of responsible financial management and respect for taxpayers; and to understand the importance of affordability to a healthy, balanced community.
4. To ensure Whitby is clearly seen by all stakeholders to be business- and investment-friendly and supportive; and to strive to continuously improve the effectiveness and efficiency of service delivery.

7. To remain the community of choice for families and become the community of choice for seniors and job creators; and to focus new growth around the principles of strong, walkable and complete neighbourhoods that offer mobility choices.

Achievement of these objectives depends on a wide range of assets that support the Town's services, including transportation, parking, solid waste collections, fire protection, parks, recreation and culture. Delivery of these services depends on the availability of suitable and reliable infrastructure assets. Maintaining, renewing, expanding and disposing of these assets can be costly, so it is essential to understand what level of service is required by the community, and how different asset maintenance and capital improvement strategies will impact the service delivered.

Through increased understanding of how infrastructure assets and management of those assets affects its services, the Town will be able to more efficiently deliver services and achieve its vision of being a 'Community of Choice'.

## 1.3 Asset Management Vision

The Town of Whitby's Asset Management vision is: *Providing the framework for responsibly managing all Town owned infrastructure.*

### 1.3.1 Asset Management Objectives

The Town works as a collaborative team to comprehensively and consistently undertake the following objectives for all Town owned assets. These asset management objectives help to inform the implementation of the Town's asset management vision:

- **Inventory:** Capture all asset types, inventories and historical data.
- **Current Valuation:** Calculate current condition ratings and replacement values.
- **Life Cycle Analysis:** Identify Maintenance and Renewal Strategies & Life Cycle Costs.
- **Service Level Targets:** Define measurable Levels of Service Targets
- **Risk & Prioritization:** Integrates all asset categories through risk and prioritization strategies.
- **Sustainable Financing:** Identify sustainable Financing Strategies for all asset categories.
- **Continuous Processes:** Provide continuous processes to ensure asset information is kept current and accurate.
- **Decision Making & Transparency:** Integrate asset management information into all corporate purchases, acquisitions and assumptions.
- **Monitoring & Reporting:** At defined intervals, assess the assets and report on progress and performance.

## **1.4 Purpose of the MAMP**

This MAMP was developed to support the Town's strategic vision for its asset management practice and programs. This Municipal Asset Management Plan (MAMP) aggregates and summarizes key data from each Service Area Asset Management Plan (SAAMP). The MAMP provides a high-level overview of:

- (i) The State of Existing Infrastructure
- (ii) Expected Levels of Service – including Key Performance indicators (KPIs)
- (iii) Risk Matrices to assist with prioritizing of capital projects
- (iv) Financial Needs
- (v) Recommendations in the pursuit of developing an advanced asset management program.

## **1.5 Contents of the MAMP**

The Town has completed a Service Area Asset Management Plan (SAAMP) for each of its seven Service Areas. This MAMP provides an aggregate discussion and analysis of these Service Areas, including:

1. Road Right-of-Way
2. Parks
3. Facilities
4. Fleet
5. Library Resources
6. Fire
7. MIS Equipment

This MAMP is developed in accordance with the Province of Ontario's *Building Together: Guide for Municipal Asset Management Plans* and includes the following core components:

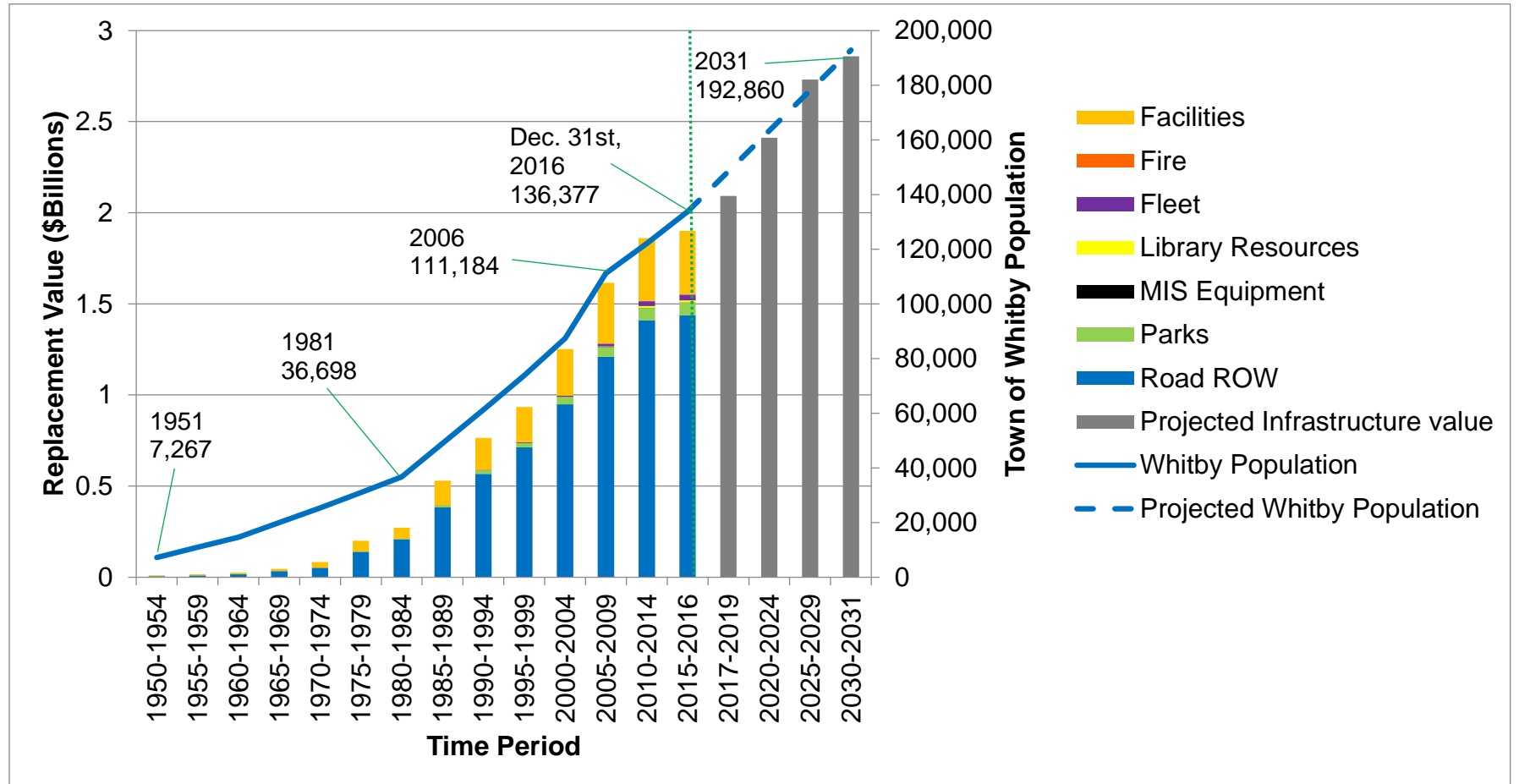
Table 1-1 Contents of the MAMP

| #          | Section Title                            | Description                                                                                                                                                                                                                                                                             |
|------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1          | Introduction                             | Explains how the goals of the municipality are dependent on infrastructure, and clarifies the relationship of the MAMP to municipal planning and financial documents.                                                                                                                   |
| 2          | State of Existing Infrastructure         | Summarizes the asset hierarchy, inventory, valuation, age distribution and condition. Also discusses how and when information regarding the characteristics, value, and condition of assets will be updated.                                                                            |
| 3          | Levels of Service                        | Defines levels of service through performance indicators and targets, and outlines current performance. Describes external trends or issues that may affect expected levels of service.                                                                                                 |
| 4          | Asset Maintenance and Renewal Strategies | The asset maintenance and renewal strategies are the set of planned actions that will enable the assets to provide the desired levels of service in a sustainable way, while managing risk, and at the lowest life cycle cost.                                                          |
| 5          | Financial Plan                           | This section integrates asset management planning with financial planning and budgeting.                                                                                                                                                                                                |
| 6          | Recommendations                          | Provides a summary of the state of the infrastructure, current level of service, and recommended asset management and funding strategies. Also summarizes recommendations for monitoring achievement of the AM objectives and for continuous improvement of the MAMP in future updates. |
| Appendix A |                                          | Provides a summary of analytical assumptions used in the AM Plan, including benchmark costs, asset service lives, capital growth, etc.                                                                                                                                                  |

## **1.6 Growth and Demand**

Growth is a critical infrastructure demand driver for most infrastructure services. As such, the municipality must not only account for the lifecycle cost for its existing asset portfolio, but those of any anticipated asset assumptions and forecasted growth related capital projects which will be addressed within the 2016 Development Charge Study Update. Whitby has experienced rapid population growth since 1980, and its infrastructure investments reflect this trend. Figure 1-3 shows how the population and infrastructure has grown since the early 1980s and the estimated growth increase for the next 15 years.

Figure 1-3 Whitby's Population and Infrastructure Trend



## 2. State of Local Infrastructure

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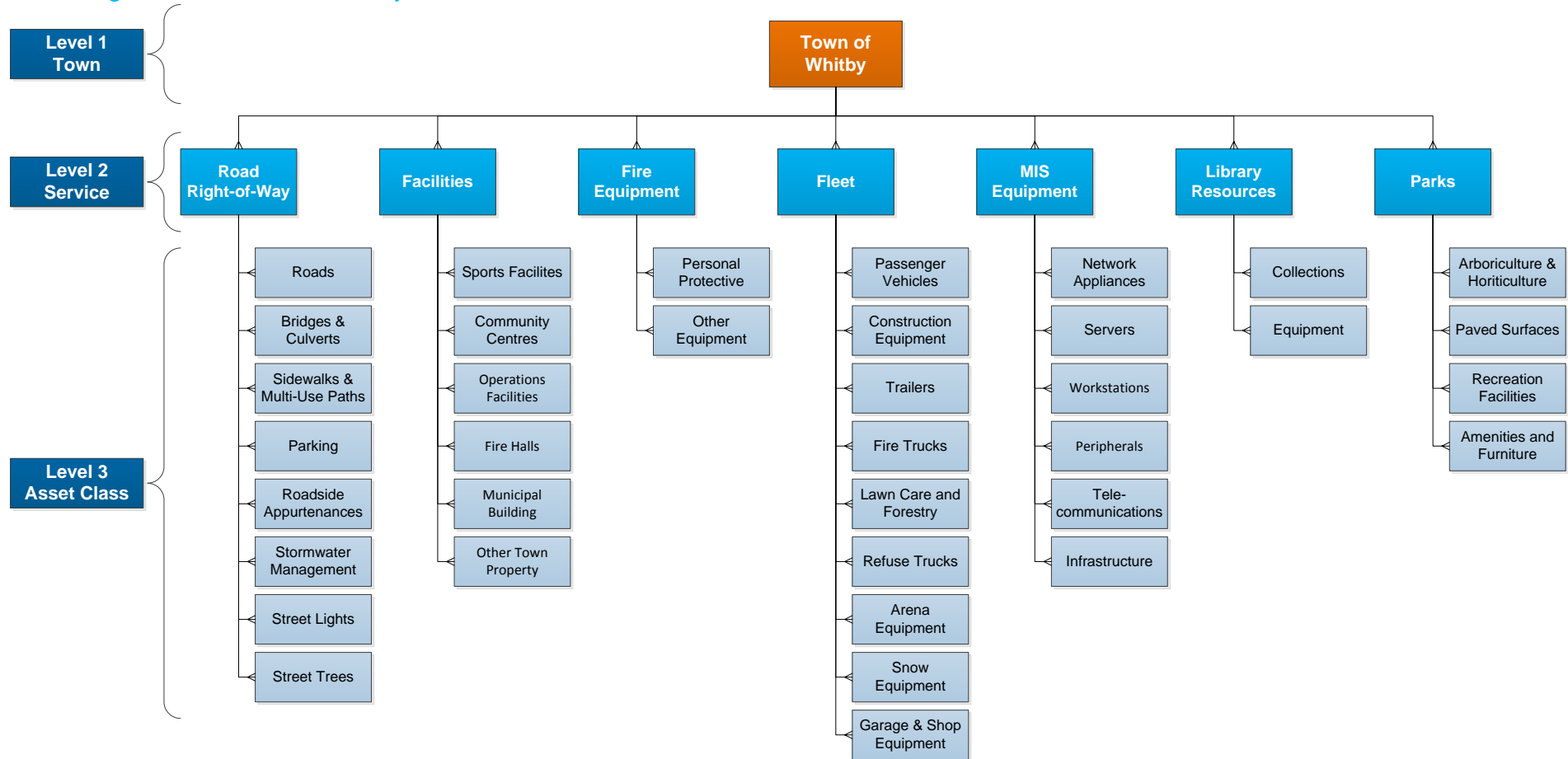
In this section, we summarize key elements in each of the Town's seven Service Areas. This includes a detailed outline of the asset inventory and the condition of assets. When observed data was not available, the age of the assets was used to approximate their conditions.



## 2.1 Asset Hierarchy

The asset hierarchy illustrates the relationship of individual Service Areas and their associated assets and components to a wider, more expansive network and system, with the 'Town of Whitby' as Level 1 in the hierarchy. Each level provides greater detail.

Figure 2-1 Asset Hierarchy and Breakdown



## 2.2 Asset Inventory

Table 2-1 to Table 2-7 enumerate the inventory of the various assets within each of the seven Service Areas.

Table 2-1 Asset Inventory: Road Right of Way

| Asset Class                 | Asset Type            | 2010 Quantity        | 2015 Quantity        | Current Quantity     |
|-----------------------------|-----------------------|----------------------|----------------------|----------------------|
| Roads                       | HCB 1                 | 50 lane km           | 51 lane km           | 51 lane km           |
|                             | HCB 2                 | 37 lane km           | 29 Lane km           | 29 lane km           |
|                             | HCB 3                 | 264 lane km          | 303 Lane km          | 305 lane km          |
|                             | HCB 4                 | 593 lane km          | 573 Lane km          | 576 lane km          |
|                             | LCB                   | 126 lane km          | 128 Lane km          | 129 lane km          |
|                             | Road Base             | 1,082 lane km        | 1,096 Lane km        | 1,099 lane km        |
| Bridges & Culverts          | Road Bridges          | 23                   | 23                   | 22                   |
|                             | Culverts (3m+)        | 21                   | 21                   | 24                   |
|                             | Culverts (0 to 3m)    | Unknown              | 2,179                | 2,179                |
|                             | Pedestrian Bridges    | 20                   | 20                   | 20                   |
| Sidewalks & Multi-Use Paths | Sidewalks             | 497,100 m            | 499,765 m            | 509,980 m            |
|                             | Multi-Use Paths       | 4,769 m              | 8,628 m              | 8,628 m              |
| Parking                     | Public Lots - Surface | 8 Lots               | 8 Lots               | 8 Lots               |
|                             | Public Lots - Base    | 8 Lots               | 8 Lots               | 8 Lots               |
|                             | Meters                | 281                  | 281                  | 281                  |
|                             | Kiosks                | Unknown              | 10                   | 10                   |
| Roadside Appurtenances      | Traffic Control Signs | 29                   | 31                   | 31                   |
|                             | Information Signs     | Unknown              | 10,674               | 10,674               |
|                             | Fences                | 26,301 m             | 30,032 m             | 30,032 m             |
|                             | Guiderails            | 11,693 m             | 12,172 m             | 12,172 m             |
|                             | Retaining Walls       | 2,663 m <sup>2</sup> | 2,732 m <sup>2</sup> | 2,732 m <sup>2</sup> |
| Stormwater Management       | Stormwater Ponds      | 39 Ponds             | 41 Ponds             | 41 Ponds             |
|                             | Storm Sewers          | 369,591 m            | 375,298 m            | 375,298 m            |
|                             | Major Channels        | 2,357 m              | 2,357 m              | 2,357 m              |
| Street Lights               | Poles                 | 7,475                | 7,776                | 7,776                |
|                             | Luminaires            | 11,379               | 11,915               | 11,915               |
| Street Trees                | Street Trees          | Unknown              | 35,526               | 35,640               |

Table 2-2 Asset Inventory Parks

| Asset Class                  | Asset Type              | 2010 Quantity          | 2015 Quantity          | Current Quantity       |
|------------------------------|-------------------------|------------------------|------------------------|------------------------|
| Arboriculture & Horticulture | Garden Beds             | 4,035.95m <sup>2</sup> | 4,416.17m <sup>2</sup> | 4,416.17m <sup>2</sup> |
| Paved Surfaces               | Access Drives           | 1,819.09m              | 2,410.76m              | 2,410.76m              |
|                              | Trails and Walkways     | 54,742.22m             | 63,877.46m             | 63,877.46m             |
|                              | Parking Lots            | 72,507m <sup>2</sup>   | 74,724m <sup>2</sup>   | 74,724m <sup>2</sup>   |
| Recreation Facilities        | Splash Pad              | 13                     | 15                     | 15                     |
|                              | Lacrosse Box            | 2                      | 2                      | 2                      |
|                              | Bocce Court             | 0                      | 2                      | 2                      |
|                              | Skateboard Park         | 3                      | 3                      | 3                      |
|                              | Soccer Pitch            | 52                     | 56                     | 56                     |
|                              | Play Space              | 79                     | 89                     | 89                     |
|                              | Baseball Diamond        | 32                     | 34                     | 34                     |
|                              | Basketball Court        | 24                     | 25                     | 25                     |
|                              | Multi-Use Court         | 7                      | 7                      | 7                      |
|                              | Tennis Court            | 24                     | 28                     | 28                     |
| Amenities and Furniture      | Picnic Shelter          | 5                      | 9                      | 9                      |
|                              | Restroom                | 4                      | 5                      | 5                      |
|                              | Field House             | 2                      | 2                      | 2                      |
|                              | Fencing                 | 55,440.58m             | 56,491.85m             | 56,491.85m             |
|                              | Arbour/Trellis          | 2                      | 3                      | 3                      |
|                              | Retaining Wall          | 0m                     | 740.37m                | 740.37m                |
|                              | Misc. Park Amenities    | 580                    | 650                    | 650                    |
|                              | Pavilion                | 21                     | 24                     | 24                     |
|                              | Signage                 | 655                    | 753                    | 760                    |
|                              | Lighting                |                        | 377                    | 377                    |
|                              | Seating                 | 827                    | 871                    | 895                    |
|                              | Sports Equipment Bunker | 20                     | 22                     | 22                     |
|                              | Fountains               | 3                      | 3                      | 3                      |

Table 2-3 Asset Inventory: Facilities

| <b>Asset Class</b>    | <b>Facility Name</b>                  | <b>2010 Quantity (sq. ft.)</b> | <b>2015 Quantity (sq. ft.)</b> | <b>Current Quantity (sq. ft.)</b> |
|-----------------------|---------------------------------------|--------------------------------|--------------------------------|-----------------------------------|
| Sports Facilities     | Iroquois Park Sports Complex          | 249,055                        | 249,055                        | 249,055                           |
|                       | Luther Vipond Memorial Arena          | 29,700                         | 29,700                         | 29,700                            |
|                       | McKinney Centre                       | 105,991                        | 105,991                        | 105,991                           |
|                       | Whitby Iroquois Soccer Dome           | 55,725                         | 55,725                         | 55,725                            |
|                       | Whitby Civic Recreation Centre        | 57,726                         | 57,726                         | 57,726                            |
| Community Centres     | Ashburn Community Centre              | 1,745                          | 1,745                          | 1,745                             |
|                       | Brock Street Activity Centre          | 2,190                          | 2,190                          | 2,190                             |
|                       | Brooklin Community Centre             | 6,362                          | 6,362                          | 6,362                             |
|                       | Brooklin Community Centre and Library | 40,612                         | 40,612                         | 40,612                            |
|                       | Centennial Building                   | 36,929                         | 36,929                         | 36,929                            |
|                       | Cullen Cottage                        | 1,877                          | 1,877                          | 1,877                             |
|                       | Cullen Log Cabin                      | 1,200                          | 1,200                          | 1,200                             |
|                       | Heydenshore Pavilion                  | 8,105                          | 8,105                          | 8,105                             |
|                       | Lawn Bowling Club                     | 800                            | 800                            | 800                               |
|                       | Lynde House Museum                    | 3,972                          | 3,972                          | 3,972                             |
|                       | Main Library Branch                   | 62,398                         | 62,398                         | 62,398                            |
|                       | Whitby Seniors Activity Centre        | 17,416                         | 17,416                         | 17,416                            |
|                       | Spencer Community Centre              | 1,173                          | 1,173                          | 1,173                             |
|                       | Station Gallery                       | 13,259                         | 13,259                         | 13,259                            |
|                       | Whitby Marina                         | 5,930                          | 5,930                          | 5,930                             |
| Operations Facilities | Cold Storage Building                 | 0                              | 3,850                          | 3,850                             |
|                       | Operations Centre                     | 64,024                         | 64,024                         | 64,024                            |
|                       | Parks Lunch Building                  | 1,000                          | 1,000                          | 1,000                             |
|                       | Parks Maintenance Building            | 10,000                         | 10,000                         | 10,000                            |
|                       | Salt and Sand Storage Dome One        | 7,725                          | 7,725                          | 7,725                             |
|                       | Salt and Sand Storage Dome Two        | 7,726                          | 7,726                          | 7,726                             |
|                       | Soils Storage Building                | 2,587                          | 2,587                          | 2,587                             |
| Fire Halls            | Fire Hall #1                          | 8,547                          | 8,547                          | 8,547                             |
|                       | Fire Hall #2                          | 7,210                          | 7,210                          | 7,210                             |
|                       | Fire Hall #3                          | 8,547                          | 8,547                          | 8,547                             |
|                       | Fire Hall #4                          | 8,547                          | 8,547                          | 8,547                             |
|                       | Fire Hall #5                          | 24,381                         | 24,381                         | 24,381                            |
| Municipal Building    | Whitby Municipal Building             | 46,737                         | 46,737                         | 46,737                            |
| Other Town Properties | 117 King Street                       | 3,605                          | 3,605                          | 3,605                             |
|                       | 316 Colborne Street West              | 2,650                          | 2,650                          | 2,650                             |

Town of Whitby Municipal Asset Management Plan

| <b>Asset Class</b>    | <b>Facility Name</b>                        | <b>2010 Quantity (sq. ft.)</b> | <b>2015 Quantity (sq. ft.)</b> | <b>Current Quantity (sq. ft.)</b> |
|-----------------------|---------------------------------------------|--------------------------------|--------------------------------|-----------------------------------|
| Other Town Properties | 508 Colborne Street West                    | 1,974                          | 1,974                          | 1,974                             |
|                       | Boat Storage Facility - 1710 Charles Street | 41,024                         | 41,024                         | 41,024                            |
|                       | Boat Storage Facility - 1712 Charles Street | 8,050                          | 8,050                          | 8,050                             |
|                       | Brock Street Pumping Station                | 540                            | 540                            | 540                               |
|                       | Brooklin Day Care Centre                    | 5,376                          | 5,376                          | 5,376                             |
|                       | Brooklin Garage                             | 2,600                          | 2,600                          | 2,600                             |
|                       | Camp X                                      | 1,257                          | 1,257                          | 1,257                             |
|                       | Chamber of Commerce                         | 7,907                          | 7,907                          | 7,907                             |
|                       | Former Fire Hall #3                         | 8,953                          | 8,953                          | 8,953                             |
|                       | Garden Street Pumping Station               | 850                            | 850                            | 850                               |
|                       | Groveside Cemetery                          | 2,551                          | 2,551                          | 2,551                             |
|                       | Methane Monitoring Station                  | 180                            | 180                            | 180                               |
|                       | Myrtle Fire Hall                            | 2,480                          | 2,480                          | 2,480                             |
|                       | Myrtle Fire Hall Storage Building           | 1,987                          | 1,987                          | 1,987                             |
|                       | Parking Lots - Gravel                       | 54,831                         | 54,831                         | 54,831                            |
|                       | Parking Lots - HCB                          | 160,857                        | 160,857                        | 160,857                           |
|                       | Pumphouse                                   | 2,875                          | 2,875                          | 2,875                             |
|                       | Former Land Registry Office                 | 8,536                          | 8,536                          | 8,536                             |
|                       | Sea Cadet Building                          | 1,310                          | 1,310                          | 1,310                             |
|                       | Whitby Animal Control                       | 3,146                          | 3,146                          | 3,146                             |

Table 2-4 Asset Inventory: Fleet

| <b>Asset Class</b>     | <b>Asset Type</b> | <b>2010 Quantity</b> | <b>2015 Quantity</b> | <b>Current Quantity</b> |
|------------------------|-------------------|----------------------|----------------------|-------------------------|
| Passenger Vehicles     | Cars              | 5                    | 7                    | 7                       |
|                        | Pick-up Trucks    | 28                   | 41                   | 41                      |
|                        | SUVs              | 2                    | 7                    | 7                       |
|                        | Vans              | 10                   | 11                   | 11                      |
| Construction Equipment | Dump Trucks       | 29                   | 35                   | 35                      |
|                        | Loader            | 2                    | 2                    | 2                       |
|                        | Gradeall          | 1                    | 1                    | 1                       |
|                        | Backhoe           | 1                    | 1                    | 1                       |
|                        | Mobile Compressor | 1                    | 1                    | 1                       |
|                        | Cement Mixer      | 1                    | 1                    | 1                       |
|                        | Grader            | 1                    | 1                    | 1                       |
|                        | Street Sweeper    | 2                    | 2                    | 2                       |
|                        | Street Flusher    | 1                    | 1                    | 1                       |

Town of Whitby Municipal Asset Management Plan

| <b>Asset Class</b>      | <b>Asset Type</b>     | <b>2010<br/>Quantity</b> | <b>2015<br/>Quantity</b> | <b>Current<br/>Quantity</b> |
|-------------------------|-----------------------|--------------------------|--------------------------|-----------------------------|
| Construction Equipment  | Vacuum Truck          | 1                        | 2                        | 2                           |
|                         | Pavement Grinder      | 3                        | 3                        | 3                           |
|                         | Hot Patcher           | 1                        | 1                        | 1                           |
|                         | Utility               | 4                        | 4                        | 4                           |
| Trailers                | Boat Trailers         | 2                        | 2                        | 2                           |
|                         | Paint Trailer         | 2                        | 2                        | 2                           |
|                         | Ice Painting Trailer  | 2                        | 1                        | 1                           |
|                         | Utility Trailers      | 20                       | 21                       | 21                          |
|                         | Water Tanker Trailers | 2                        | 3                        | 3                           |
| Fire Trucks             | Aerial Trucks         | 2                        | 2                        | 2                           |
|                         | Pumper Trucks         | 5                        | 9                        | 9                           |
|                         | Rescue Trucks         | 1                        | 1                        | 1                           |
|                         | Tanker Trucks         | 1                        | 1                        | 1                           |
| Lawn Care & Forestry    | Litter Truck          | 2                        | 2                        | 2                           |
|                         | Chipper Truck         | 3                        | 3                        | 3                           |
|                         | Tractors              | 4                        | 4                        | 4                           |
|                         | Mowers                | 18                       | 24                       | 24                          |
|                         | Turf Care Machines    | 13                       | 24                       | 24                          |
| Refuse Trucks           | Side-loader           | 17                       | 17                       | 17                          |
|                         | Rear-loader           | 3                        | 3                        | 3                           |
|                         | Hooklift              | 1                        | 1                        | 1                           |
| Arena Equipment         | Zamboni               | 7                        | 9                        | 9                           |
|                         | Ice Edger             | 7                        | 8                        | 8                           |
| Snow Equipment          | Sidewalk Machines     | 12                       | 16                       | 16                          |
|                         | Sanders               | 1                        | 2                        | 2                           |
|                         | Snow Blowers          | 15                       | 15                       | 15                          |
| Garage & Shop Equipment | Hoist                 | 13                       | 13                       | 13                          |
|                         | A/C Machine           | 1                        | 1                        | 1                           |
|                         | Overhead Crane        | 1                        | 1                        | 1                           |
|                         | Blade Sharpener       | 1                        | 1                        | 1                           |
|                         | Fuel Pump             | 3                        | 3                        | 3                           |
|                         | Drill Press           | 2                        | 2                        | 2                           |
|                         | Compressor            | 1                        | 1                        | 1                           |
|                         | Sweeper/Scrubber      | 1                        | 1                        | 1                           |
|                         | Saws                  | 2                        | 1                        | 1                           |

Table 2-5 Asset Inventory: Library

| Asset Class | Asset Type       | 2010 Quantity | 2015 Quantity | 2016 Quantity |
|-------------|------------------|---------------|---------------|---------------|
| Collections | Various          | 268,078       | 322,632       | 322,632       |
| Equipment   | Servers          | Unknown       | 27            | 235           |
|             | Printers         | Unknown       | 30            | 208           |
|             | Network Hardware | Unknown       | 234           | 250           |
|             | Monitors         | Unknown       | 208           | 34            |
|             | Desktops/Laptops | Unknown       | 234           | 37            |

Table 2-6 Asset Inventory: Fire Equipment

| Asset Class | Asset Type       | 2010 Quantity | 2015 Quantity | 2016 Quantity |
|-------------|------------------|---------------|---------------|---------------|
| PPE         | Breathing Air    | 436           | 436           | 456           |
|             | Bunker Gear      | 179           | 179           | 199           |
| Equipment   | Pumper Equipment | 9             | 9             | 9             |
|             | Aerial Equipment | 2             | 2             | 2             |
|             | Communications   | 176           | 176           | 176           |

Table 2-7 Asset Inventory: MIS Equipment

| Asset Class             | 2010 Quantity | 2015 Quantity | Current Quantity |
|-------------------------|---------------|---------------|------------------|
| Network Appliances      | Unknown       | 176           | 196              |
| Servers                 | Unknown       | 18            | 26               |
| Workstations            | Unknown       | 473           | 548              |
| Peripherals             | Unknown       | 610           | 670              |
| Tele-Communications PBX | Unknown       | 471           | 471              |
| Infrastructure          | Unknown       | 29,651m       | 29,651 m         |



## 2.3 Replacement Cost Valuation

Replacement values determined using unit costs for individual asset components will yield more reliable estimates of current market prices. The Town provided user-defined replacement costs. As of 2016, the estimated replacement value for the seven Service Areas in this MAMP totalled \$1.97 billion. The total cost, or ownership, per household is approximately \$43,032 using 45,772 households.

Figure 2-2 2016 Asset Valuation by Service Level

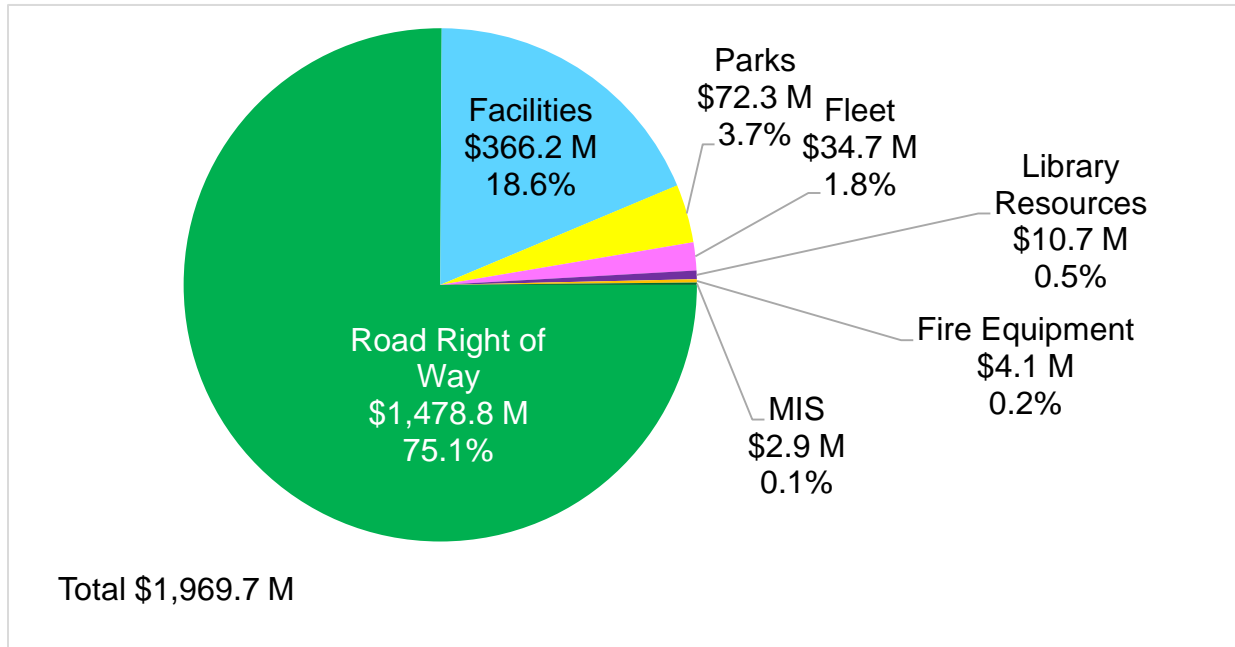


Figure 2-3 Replacement Value per Household by Service Area

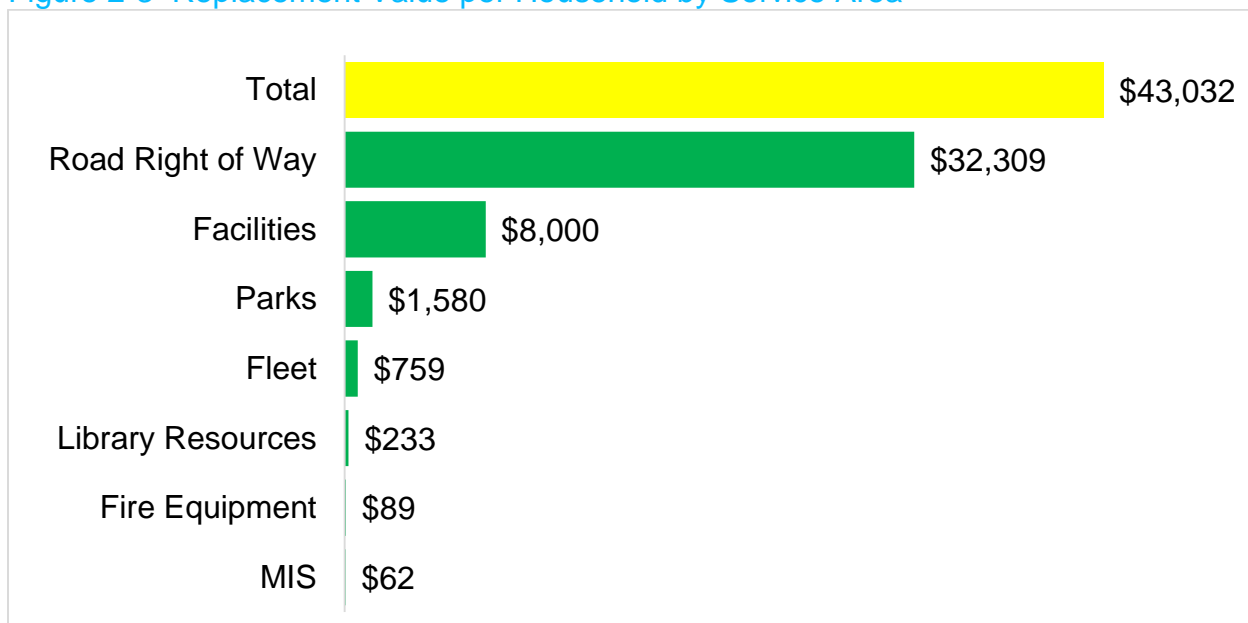


Figure 2-4 2016 Asset Valuation– Road Right of Way

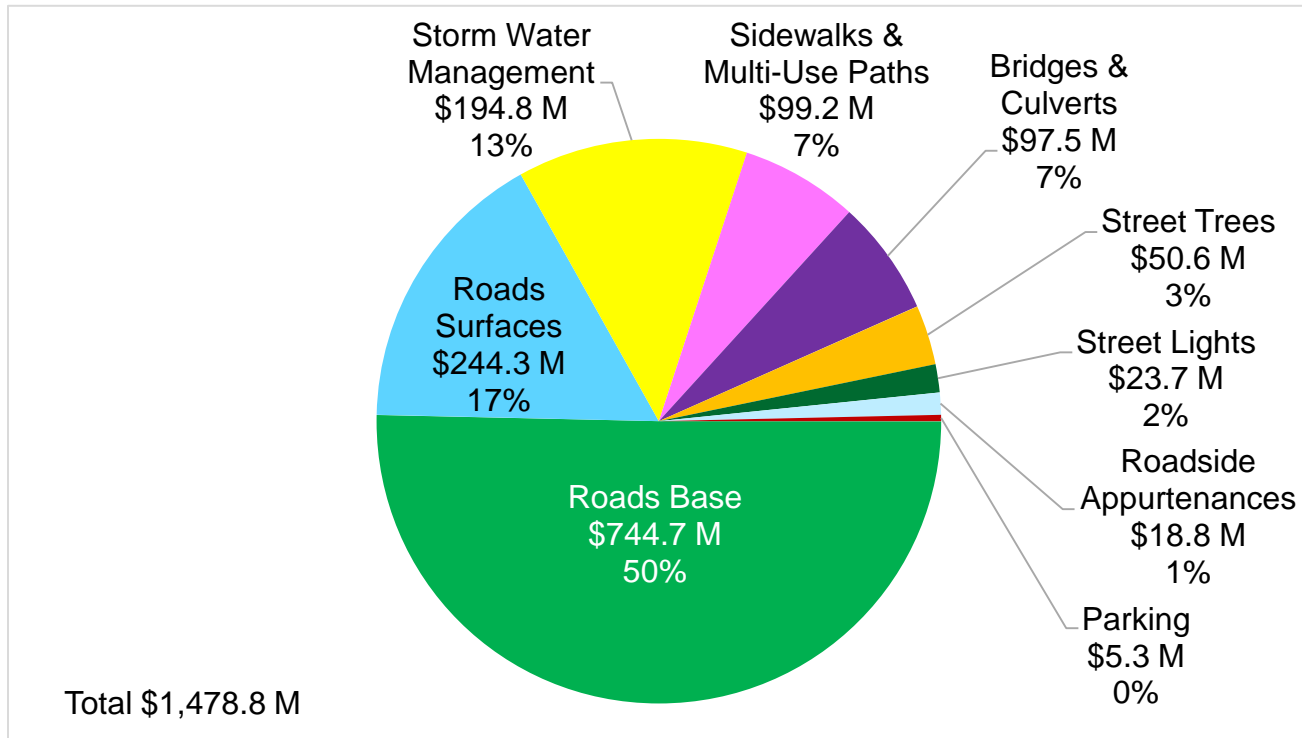


Figure 2-5 2016 Asset Valuation– Parks

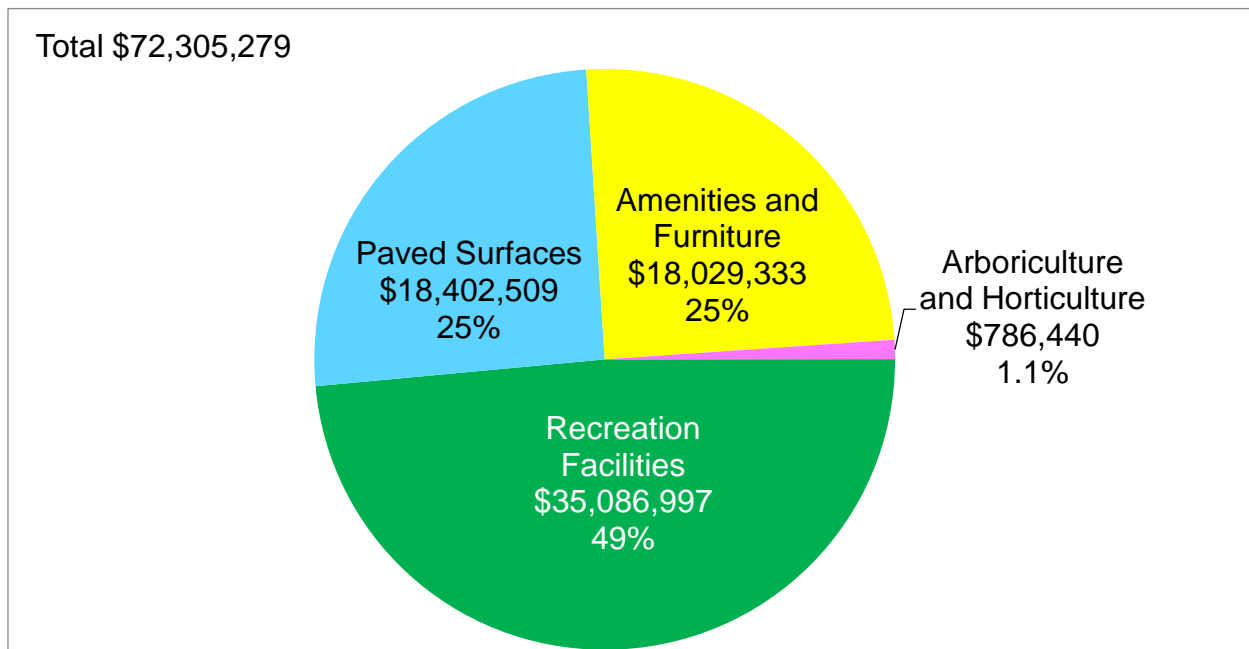


Figure 2-6 2016 Asset Valuation– Facilities

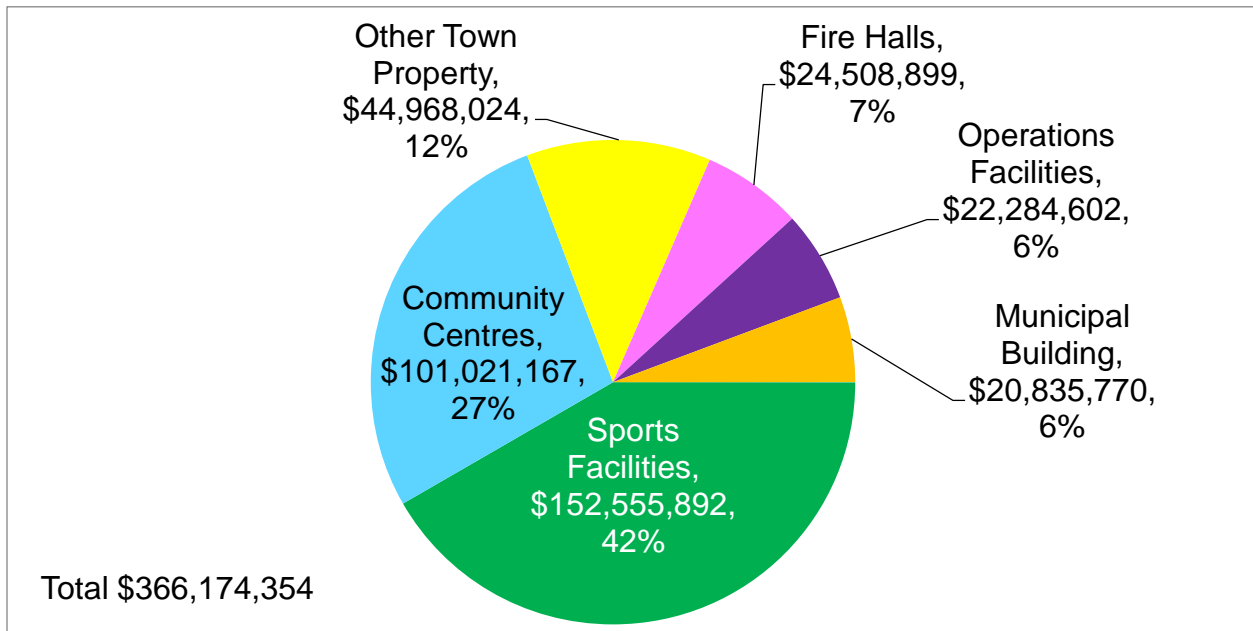


Figure 2-7 2016 Asset Valuation– Fleet

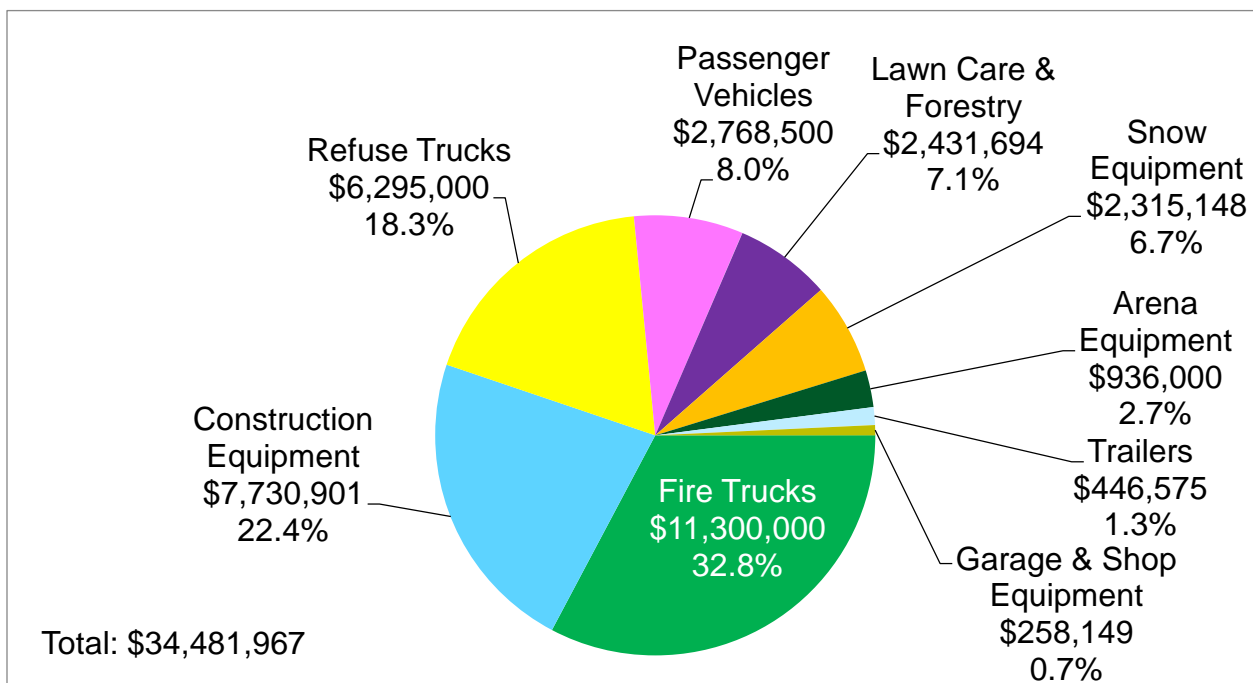


Figure 2-8 2016 Asset Valuation – Library

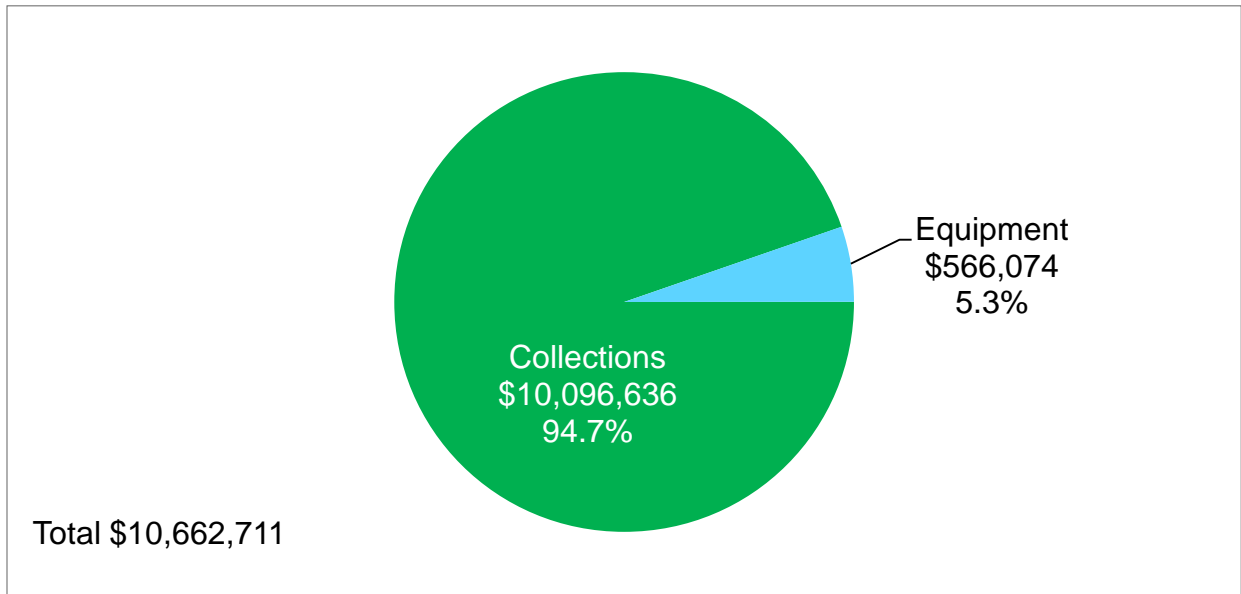


Figure 2-9 2016 Asset Valuation– Fire

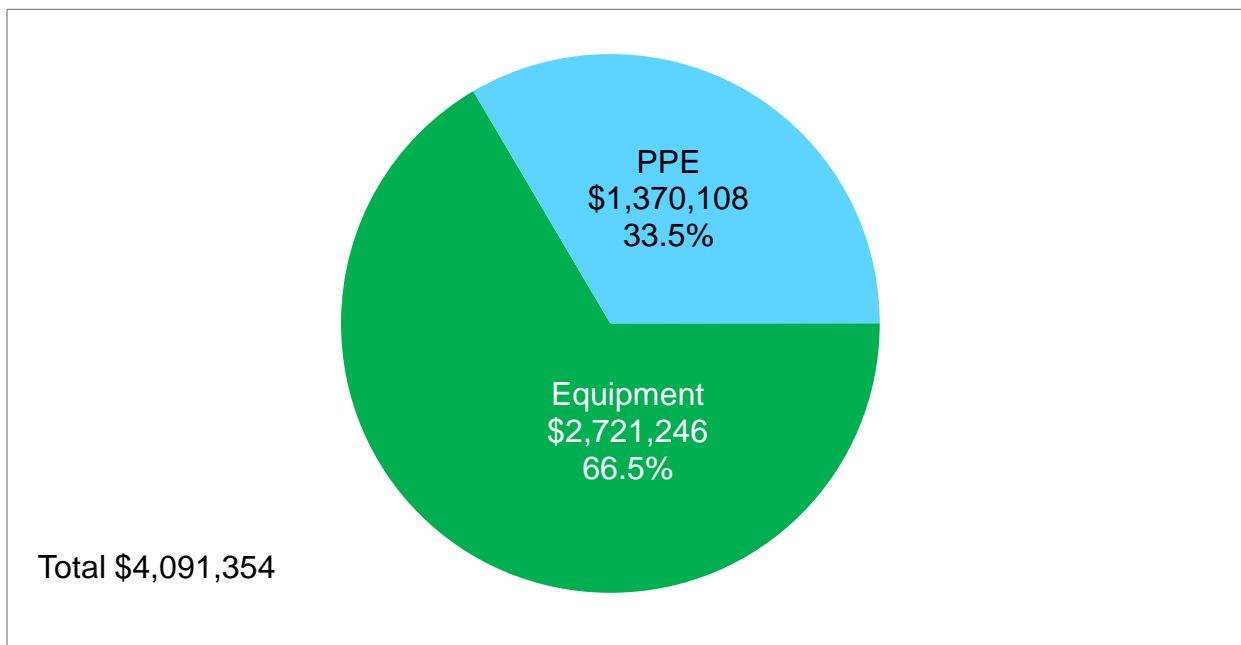
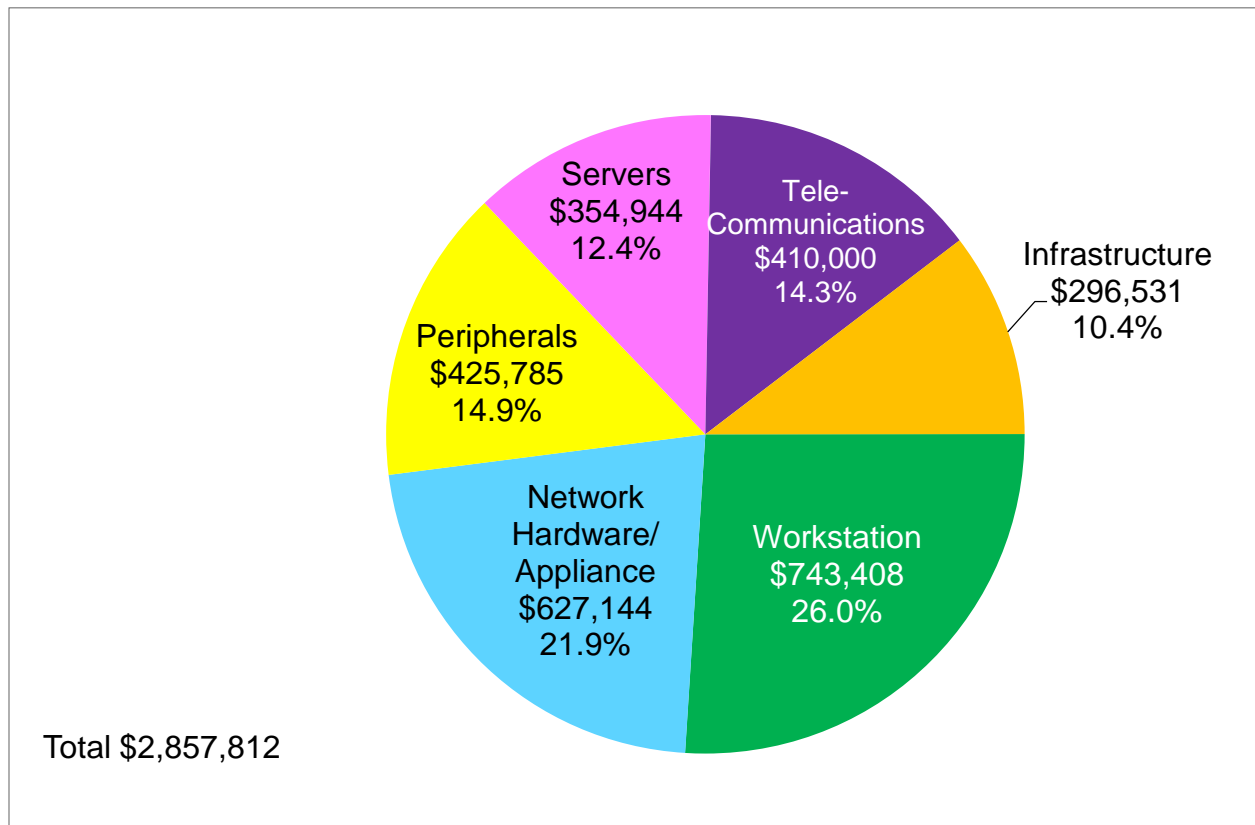


Figure 2-10 2016 Asset Valuation – MIS Equipment



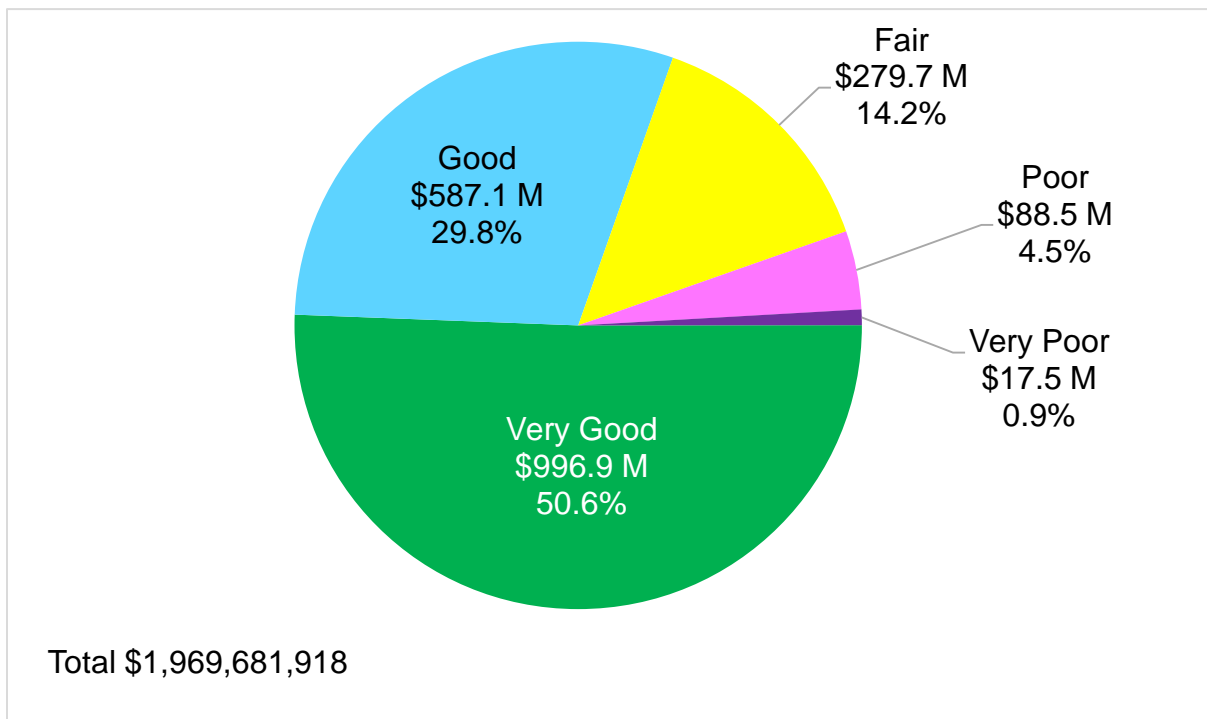
## 2.4 Asset Condition

Understanding the current condition of the assets can provide the Town with a more complete picture of its infrastructure portfolio and upcoming short, medium and long-term needs. The Town has developed condition scales for each of its Service Areas. These are provided in the Appendix.

### 2.4.1 Asset Condition Distribution

This section provides detail on the physical condition of the assets within each of Town of Whitby's Service Areas. Based on replacement cost, and a blend of age-based data and observed data, the vast majority, 94.6%, of Whitby's assets, as analysed in this MAMP, are in fair to very good condition. However, 5.4% of assets fall into the Poor or Very Poor condition classes and are worth \$88.5 million and \$17.5 million respectively.

Figure 2-11 Condition Distribution – All Assets Combined



The following graphs illustrate the condition distribution of each of the Town's seven Service Areas.

Figure 2-12 Asset Condition – Road Right of Way

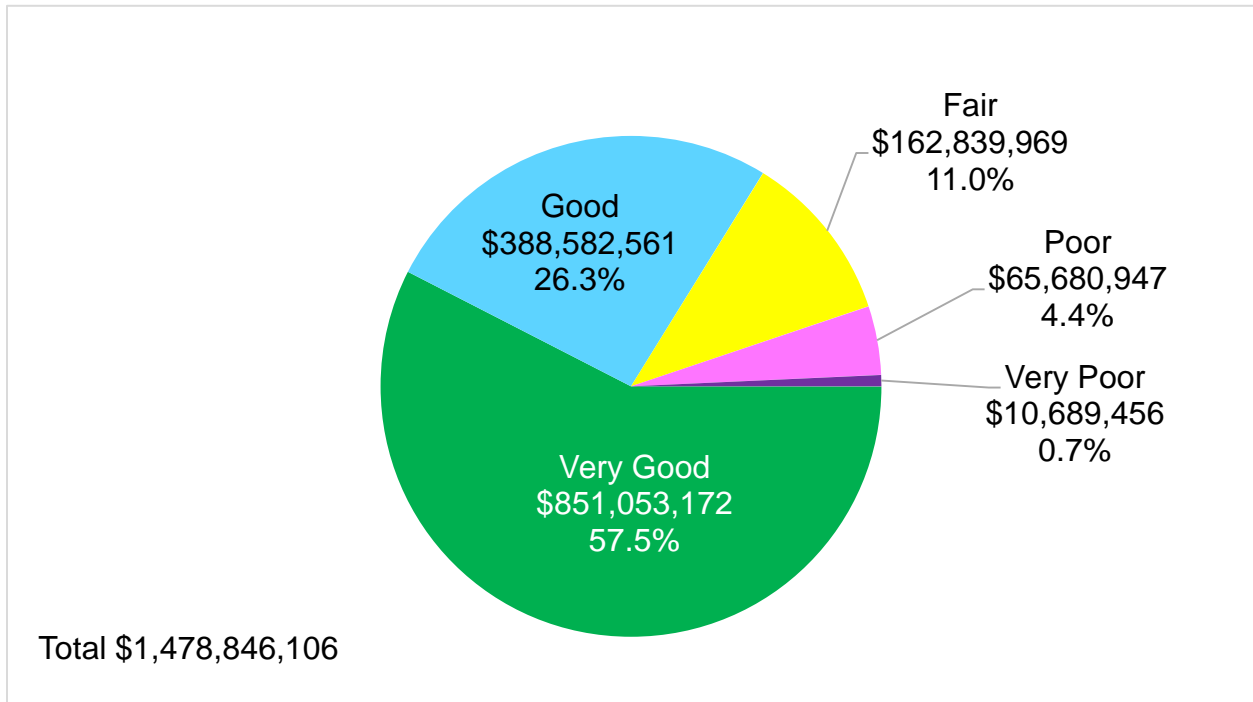


Figure 2-13 Asset Condition – Parks

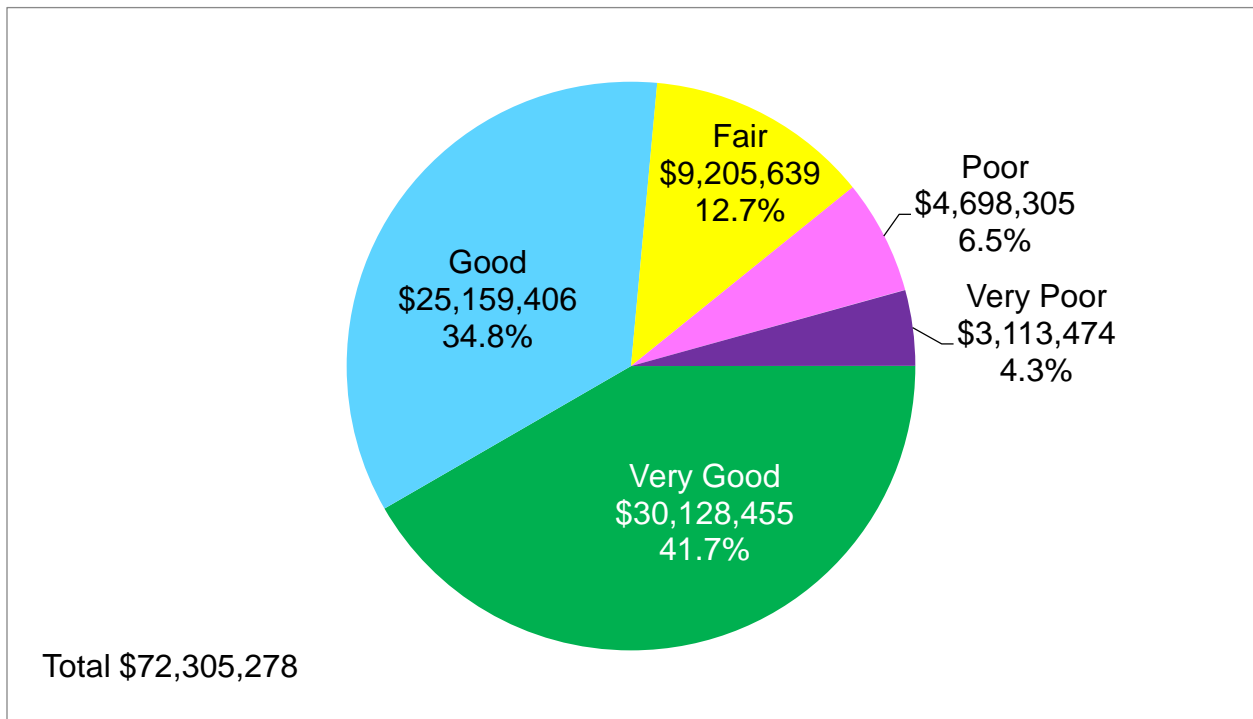




Figure 2-14 Asset Condition –Facilities

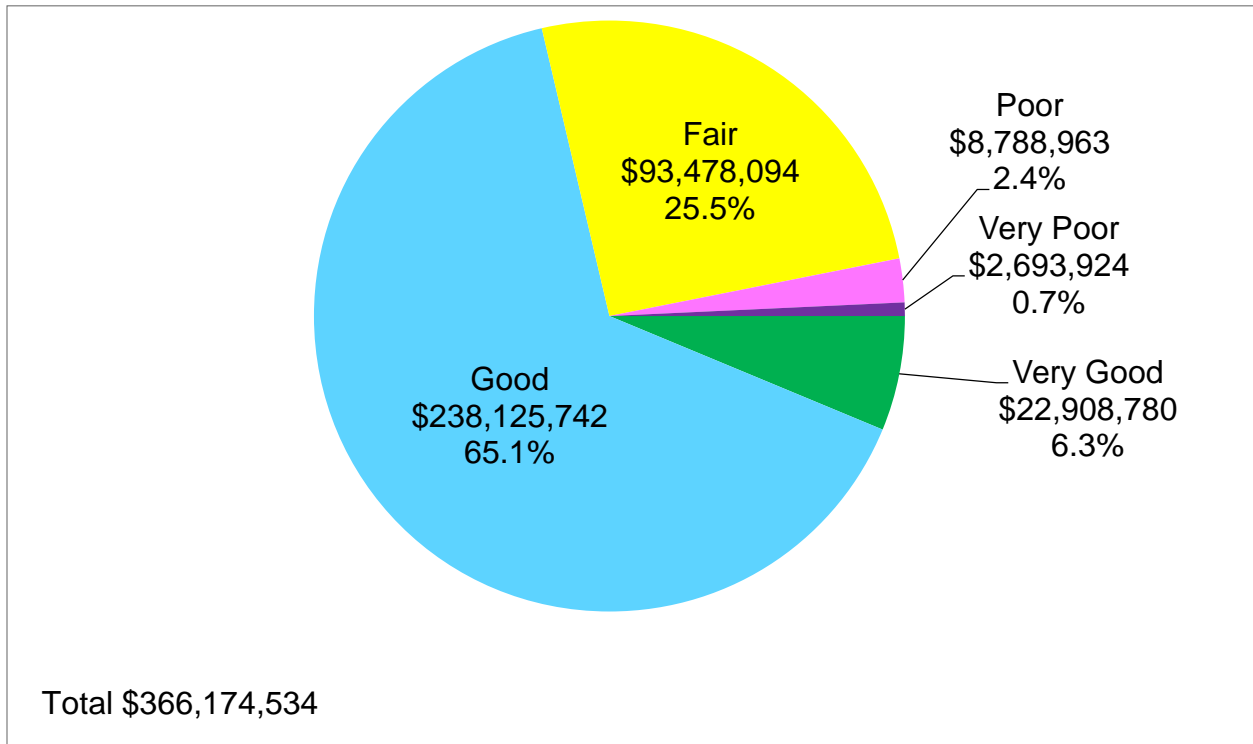


Figure 2-15 Asset Condition – Fleet

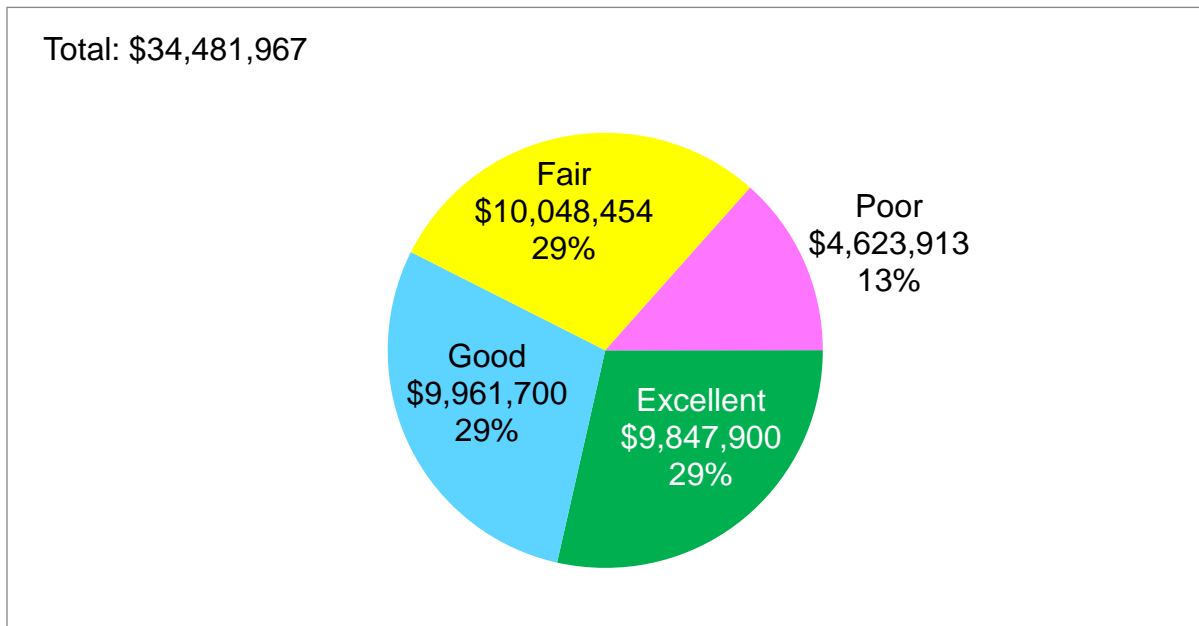


Figure 2-16 Asset Condition –Library

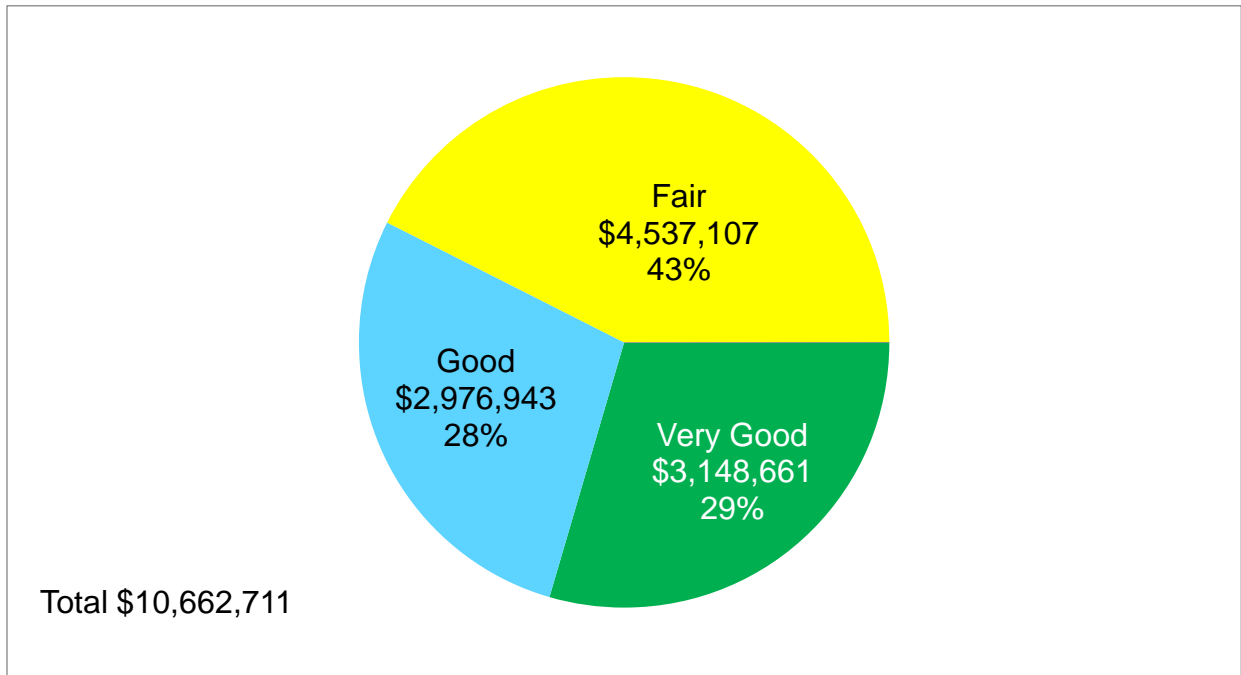


Figure 2-17 Asset Condition – Fire

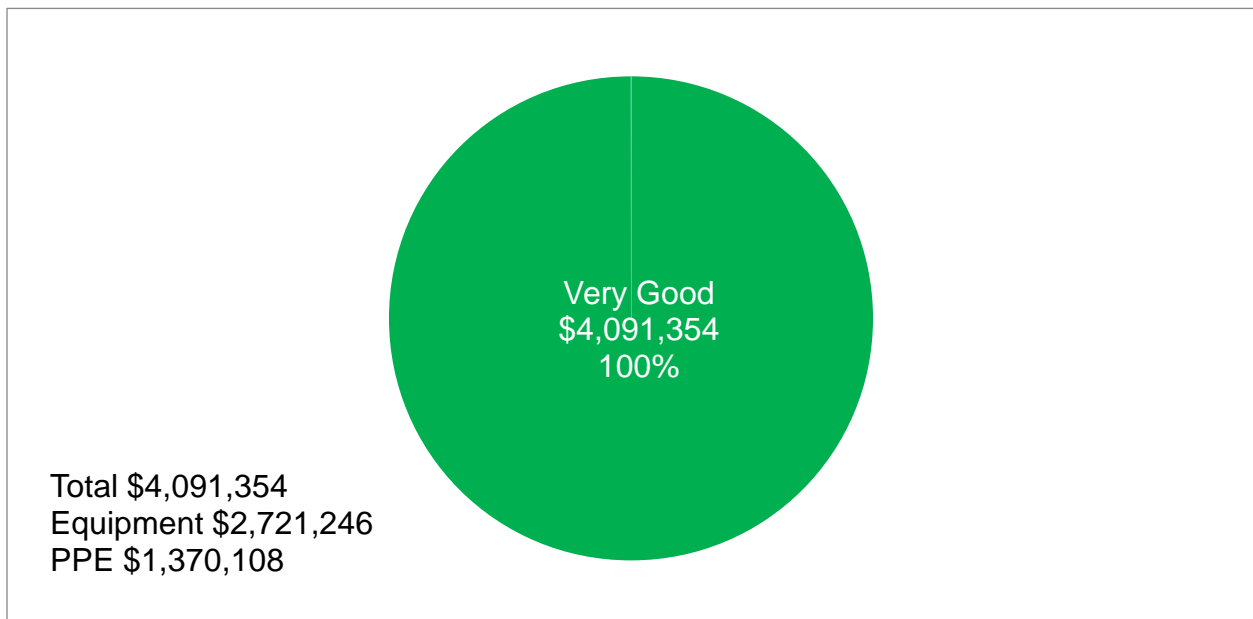
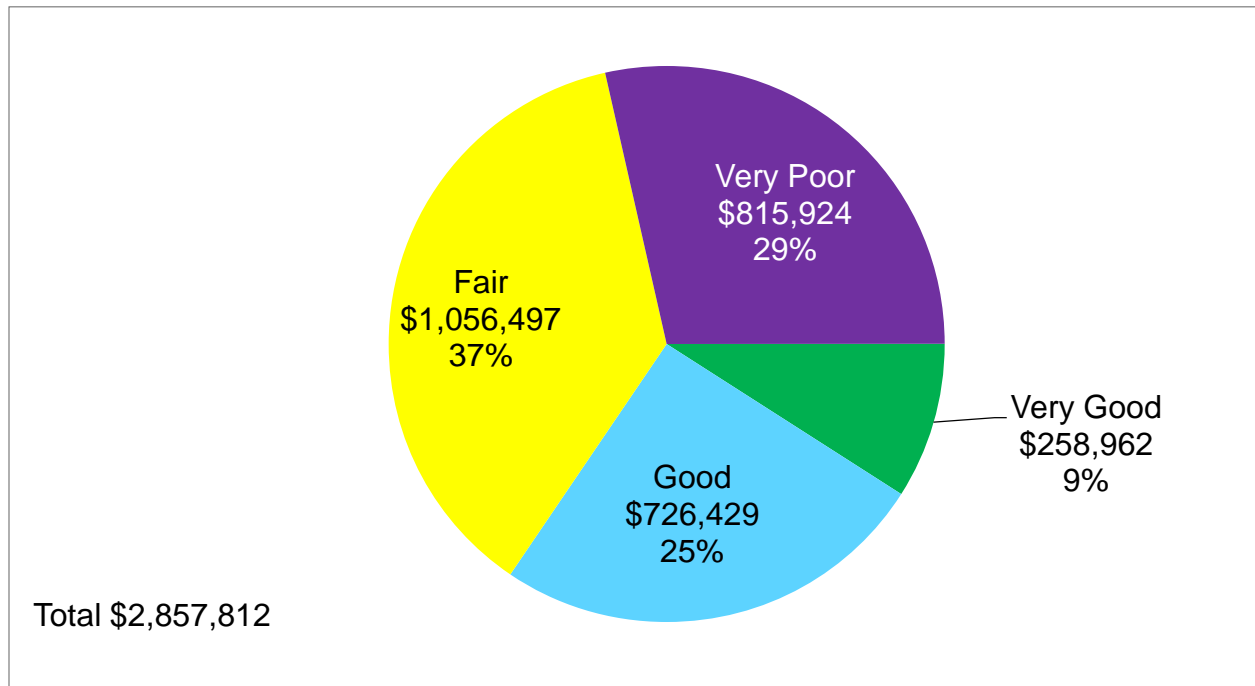


Figure 2-18 Asset Condition – MIS Equipment



## 2.4.2 Asset Health Grade

The asset management plan is a complex document, but one with direct implications on the public, a group with varying degrees of technical knowledge. To facilitate communications, an Asset Health Grade has been developed which provide grades for each infrastructure class based on the portion of assets in Very Poor to Very Good condition.

The Asset Health Grade is a snapshot in time (December 31, 2015) – and does not look at future asset assumptions or future funding needs to continue to adequately maintain our assets. It is also important to note that the Asset Health Grade is an average of all the Service Area's assets, and some individual assets have a condition higher and lower than what the average grade indicates.

Table 2-8 Asset Health Grading Scale

| Letter Grade | Numerical Scale | Rating    | Description                                                                                                                |
|--------------|-----------------|-----------|----------------------------------------------------------------------------------------------------------------------------|
| A            | 4.50-5.0        | Very Good | Asset is new or recently rehabilitated                                                                                     |
| B            | 3.50-4.49       | Good      | Asset is no longer new, but is fulfilling its function. Preventative maintenance is beneficial at this stage.              |
| C            | 2.50-3.49       | Fair      | Deterioration is evident but asset continues to fulfil its function. Preventative maintenance is beneficial at this stage. |
| D            | 1.50-2.49       | Poor      | Significant deterioration is evident and service is at risk.                                                               |
| F            | 1.0-1.49        | Very Poor | Asset is beyond expected life and has deteriorated to the point that it may no longer be fit to fulfil its function.       |

The asset health grade for each Service Area was derived using weighted average of its replacement cost according to the following equation:

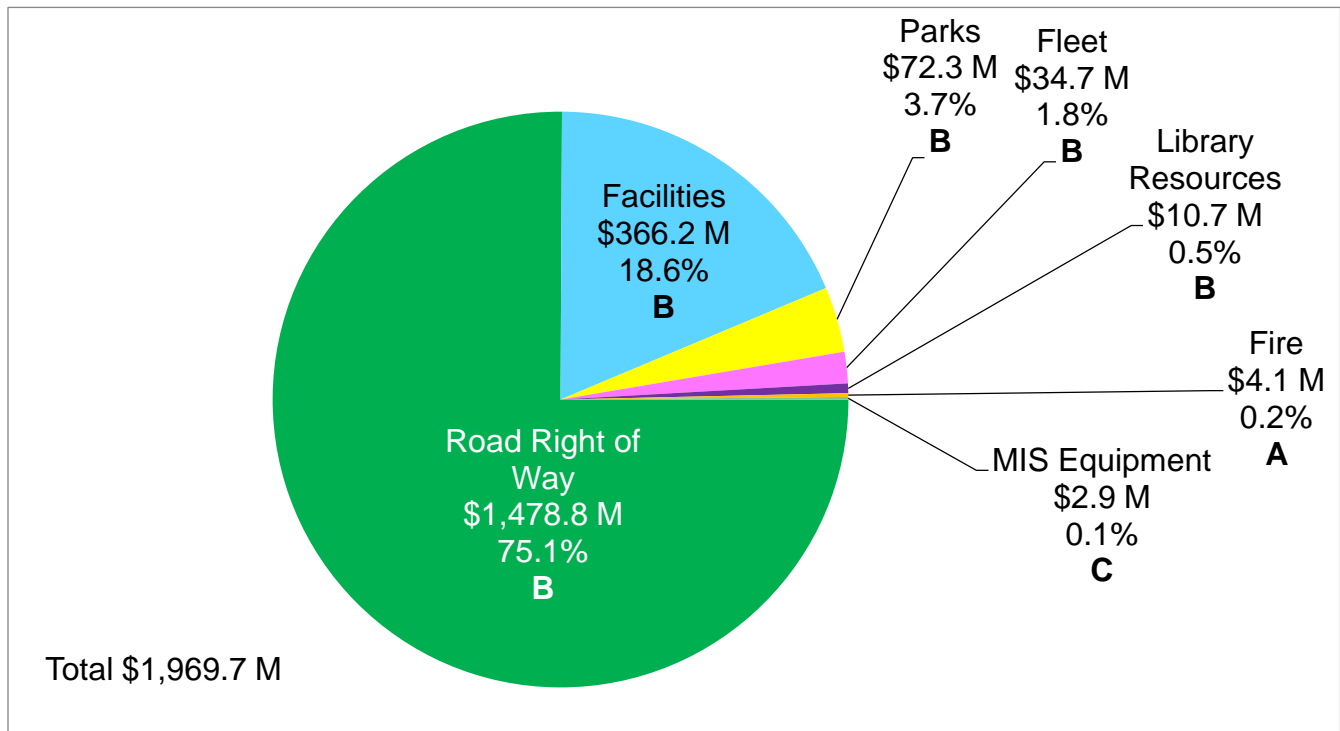
**Asset Health Grade** =  $((5 * \text{asset value in excellent condition}) + (4 * \text{asset value in good condition}) + (3 * \text{asset value in fair condition}) + (2 * \text{asset value in poor condition}) + (1 * \text{asset value in very poor condition})) / \text{total asset value}$ .

The overall grade was derived using the total replacement cost of all assets analysed in this MAMP as a weighting factor. The following tables illustrate the calculations.

Table 2-9 Asset Health Grade

| Service Area           | Replacement Cost | %Total Replacement Cost | Numerical Rating                  | Letter Grade | Weighted Numerical Rating |
|------------------------|------------------|-------------------------|-----------------------------------|--------------|---------------------------|
| Road Right of Way      | \$1,478,846,106  | 75.08%                  | 4.2                               | B            | 3.15                      |
| Facilities             | \$366,174,354    | 18.59%                  | 3.7                               | B            | 0.70                      |
| Parks                  | \$72,305,281     | 3.67%                   | 4.0                               | B            | 0.15                      |
| Fleet                  | \$34,744,300     | 1.76%                   | 3.8                               | B            | 0.07                      |
| Library Resources      | \$10,662,711     | 0.54%                   | 3.9                               | B            | 0.02                      |
| Fire                   | \$4,091,354      | 0.21%                   | 5.0                               | A            | 0.01                      |
| MIS Equipment          | \$2,857,812      | 0.15%                   | 3.6                               | C            | 0.01                      |
| Total Replacement Cost | \$1,969,681,918  | 100%                    | Overall Weighted Numerical Rating |              | 4.09                      |
| Overall Weighted Grade |                  |                         |                                   |              | B                         |

Figure 2-19 Asset Condition – All Service Areas



## 2.5 Asset Age

The expected useful life indicated for the asset types below has been established using industry standards and best practices. In conjunction with observed field data, the useful life values and the associated asset life stage can guide the maintenance, rehabilitation or replacement related activities of major assets.

Table 2-10 Asset Useful Life in Years: Road Right of Way

| Asset Class                 | Asset Type               | Expected Useful Life |
|-----------------------------|--------------------------|----------------------|
| Roads                       | HCB 1 Surface/HCB 1 Base | 15/90                |
|                             | HCB 2 Surface/HCB 2 Base | 15/90                |
|                             | HCB 3 Surface/HCB 3 Base | 35/96                |
|                             | HCB 4 Surface/HCB 4 Base | 35/96                |
|                             | LCB                      | 20                   |
| Bridges & Culverts          | Deck and Superstructure  | 60                   |
|                             | Substructure             | 120                  |
|                             | Culverts (3m+)           | 90                   |
|                             | Culverts (0 to 3m)       | 50                   |
|                             | Pedestrian Bridges       | 30/35/40/50          |
| Sidewalks & Multi-Use Paths | Sidewalks                | 45                   |
|                             | Multi-Use Paths          | 20                   |
| Parking                     | Public Lots - Surface    | 25                   |
|                             | Public Lots - Base       | 100                  |
|                             | Meters                   | 20                   |
| Roadside Appurtenances      | Traffic Control Signs    | 30                   |
|                             | Information Signs        | 10/20                |
|                             | Fences                   | 20/25/30             |
|                             | Guiderails               | 25                   |
|                             | Retaining Walls          | 25/30/35/50/65/80    |
| Stormwater Management       | Stormwater Ponds         | 90                   |
|                             | Storm Sewers             | 90                   |
|                             | Major Channels           | 80                   |
| Street Lights               | Poles                    | 50                   |
|                             | Luminaries               | 25                   |
| Street Trees                | Street Trees             | 50                   |

Table 2-11 Asset Useful Life in Years: Parks

| Asset Class                  | Asset Type               | Expected Useful Life |
|------------------------------|--------------------------|----------------------|
| Arboriculture & Horticulture | Garden Beds              | 25                   |
| Paved Surfaces               | Access Drives            | 5/7/10               |
|                              | Trails and Walkways      | 10/20/50             |
|                              | Parking Lots             | 35                   |
|                              |                          |                      |
| Recreation Facilities        | Splash Pads              | 15                   |
|                              | Lacrosse Boxes           | 20                   |
|                              | Bocce Courts             | 20                   |
|                              | Skateboard Parks         | 25                   |
|                              | Soccer Pitches           | 40                   |
|                              | Play Spaces              | 15                   |
|                              | Baseball Diamonds        | 30                   |
|                              | Basketball Courts        | 20                   |
|                              | Multi-Use Courts         | 20                   |
|                              | Tennis Courts            | 20                   |
|                              |                          |                      |
| Amenities and Furniture      | Picnic Shelters          | 15/25                |
|                              | Restrooms                | 25                   |
|                              | Field Houses             | 25                   |
|                              | Fencing                  | 10/20/40             |
|                              | Arbours/Trellis          | 25                   |
|                              | Retaining Walls          | 20                   |
|                              | Misc. Park Amenities     | 10/20/100            |
|                              | Pavilions                | 25                   |
|                              | Signage                  | 10/15/100            |
|                              | Lighting                 | 40                   |
|                              | Seating                  | 10/20                |
|                              | Sports Equipment Bunkers | 20/100               |
|                              | Fountains                | 20                   |
|                              |                          |                      |



Table 2-12 Asset Useful Life in Years: Facilities

| Building Element                         | Element Type                | Useful Life in Years |
|------------------------------------------|-----------------------------|----------------------|
| Driveways, Parking Lots, Walkways, Curbs | Asphalt                     | 10                   |
|                                          | Concrete                    | 15                   |
|                                          | Gravel                      | 10                   |
|                                          | Interlocking blocks         | 20                   |
| Fencing, Handrails                       | Concrete                    | 20                   |
|                                          | Masonry                     | 20                   |
|                                          | Metal, Wrought Iron         | 25                   |
|                                          | Aluminium                   | 15                   |
|                                          | Steel, Chain Link           | 15                   |
|                                          | Wood                        | 10                   |
| Landscaping, General                     | Sodding, Shrubs, Etc.       | 10                   |
|                                          | Trees                       | 20                   |
| Parking Lot Guards                       | Parking Bumpers             | 5                    |
|                                          | Guard rails                 | 10                   |
| Retaining Walls                          | Concrete                    | 25                   |
|                                          | Masonry                     | 25                   |
|                                          | Wood                        | 15                   |
| Stairs, Porches, Decks                   | Concrete                    | 15                   |
|                                          | Wood                        | 10                   |
| Storage, Service Buildings               | Masonry                     | 20                   |
|                                          | Wood                        | 15                   |
| Balcony Railings                         | Steel                       | 15                   |
|                                          | Aluminium                   | 15                   |
|                                          | Wood                        | 10                   |
|                                          | Concrete slabs              | 25                   |
|                                          | Concrete                    | 15                   |
|                                          | Toppings/waterproofing      | 15                   |
| Caulking, Weather Stripping              | Caulking, weather-stripping | 10                   |
| Exterior Entrance and Patio Doors        | Aluminium                   | 20                   |
|                                          | Steel                       | 20                   |
|                                          | Wood                        | 20                   |
|                                          | Aluminium – storm           | 15                   |
| Exterior Walls, Columns, Siding          | Aluminium                   | 25                   |
|                                          | Asphalt shingles            | 15                   |
|                                          | Masonite                    | 20                   |
|                                          | Masonry                     | 20                   |
|                                          | Steel                       | 25                   |
|                                          | Stucco                      | 20                   |
|                                          | Vinyl                       | 25                   |

| Building Element                 | Element Type        | Useful Life in Years |
|----------------------------------|---------------------|----------------------|
| Exterior Walls, Columns, Siding  | Damp – proofing     | 25                   |
| Metal Flashing                   | Aluminium           | 25                   |
|                                  | Galvanized, Painted | 15                   |
|                                  | Pre-finished Steel  | 10                   |
|                                  |                     |                      |
| Rainwater Gutters and Downspouts | Aluminium           | 15                   |
|                                  | Plastic             | 15                   |
|                                  | Galvanized          | 20                   |
| Roofing                          | Asphalt shingles    | 15                   |
|                                  | Built-up            | 15                   |
|                                  | Inverted            | 20                   |
|                                  | Metal               | 25                   |
|                                  | Single-ply          | 20                   |

Table 2-13 Asset Useful Life in Years: Fleet

| Asset Class            | Asset Type            | Useful Life |
|------------------------|-----------------------|-------------|
| Passenger Vehicles     | Cars                  | 10          |
|                        | Pick-up Trucks        | 10          |
|                        | SUVs                  | 10          |
|                        | Vans                  | 10          |
| Construction Equipment | Dump Trucks           | 10          |
|                        | Loader                | 10          |
|                        | Gradeall              | 10          |
|                        | Backhoe               | 15          |
|                        | Mobile Compressor     | 10          |
|                        | Cement Mixer          | 20          |
|                        | Grader                | 15          |
|                        | Street Sweeper        | 7           |
|                        | Street Flusher        | 10          |
|                        | Vacuum Truck          | 10          |
|                        | Pavement Grinder      | 5           |
|                        | Hot Patcher           | 10          |
|                        | Utility               | 10          |
| Trailers               | Boat Trailers         | 15          |
|                        | Paint Trailer         | 15          |
|                        | Ice Painting Trailer  | 15          |
|                        | Utility Trailers      | 15          |
|                        | Water Tanker Trailers | 10          |
| Fire Trucks            | Aerial Trucks         | 10          |
|                        | Pumper Trucks         | 10          |
|                        | Rescue Trucks         | 15          |
|                        | Tanker Trucks         | 15          |

| Asset Class             | Asset Type                         | Useful Life |
|-------------------------|------------------------------------|-------------|
| Lawn Care & Forestry    | Litter Truck                       | 7           |
|                         | Chipper Truck                      | 8           |
|                         | Tractors                           | 10          |
|                         | Wide Cut Mowers                    | 8           |
|                         | Walk Behind and Front Mount Mowers | 7           |
|                         | Turf Care Machines                 | 20          |
| Refuse Trucks           | Side-loader                        | 7           |
|                         | Rear-loader                        | 10          |
|                         | Hooklift                           | 10          |
| Arena Equipment         | Zamboni                            | 6           |
|                         | Ice Edger                          | 10          |
| Snow Equipment          | Sidewalk Machines                  | 10          |
|                         | Sanders                            | 10          |
|                         | Snow Blowers                       | 10          |
| Garage & Shop Equipment | Hoist                              | 15          |
|                         | A/C Machine                        | 10          |
|                         | Overhead Crane                     | 25          |
|                         | Blade Sharpener                    | 10          |
|                         | Fuel Pump                          | 15          |
|                         | Drill Press                        | 15          |
|                         | Compressor                         | 20          |
|                         | Sweeper/Scrubber                   | 15          |
|                         | Saws                               | 20          |

Table 2-14 Asset Useful Life in Years: Library

| Asset Class | Asset Type       | Expected Useful Life |
|-------------|------------------|----------------------|
| Collections | Various          | 7                    |
| Equipment   | Servers          | 5                    |
|             | Printers         | 5                    |
|             | Network Hardware | 5                    |
|             | Monitors         | 5                    |
|             | Desktop Laptop   | 5                    |

Table 2-15 Asset Useful Life in Years: Fire

| Asset Class | Asset Type       | Quantity | Useful Life (Years) |
|-------------|------------------|----------|---------------------|
| PPE         | Breathing Air    | 436      | 10/15/20            |
|             | Bunker Gear      | 179      | 10                  |
| Equipment   | Pumper Equipment | 9        | 15                  |
|             | Aerial Equipment | 2        | 20                  |
|             | Communications   | 176      | 10                  |

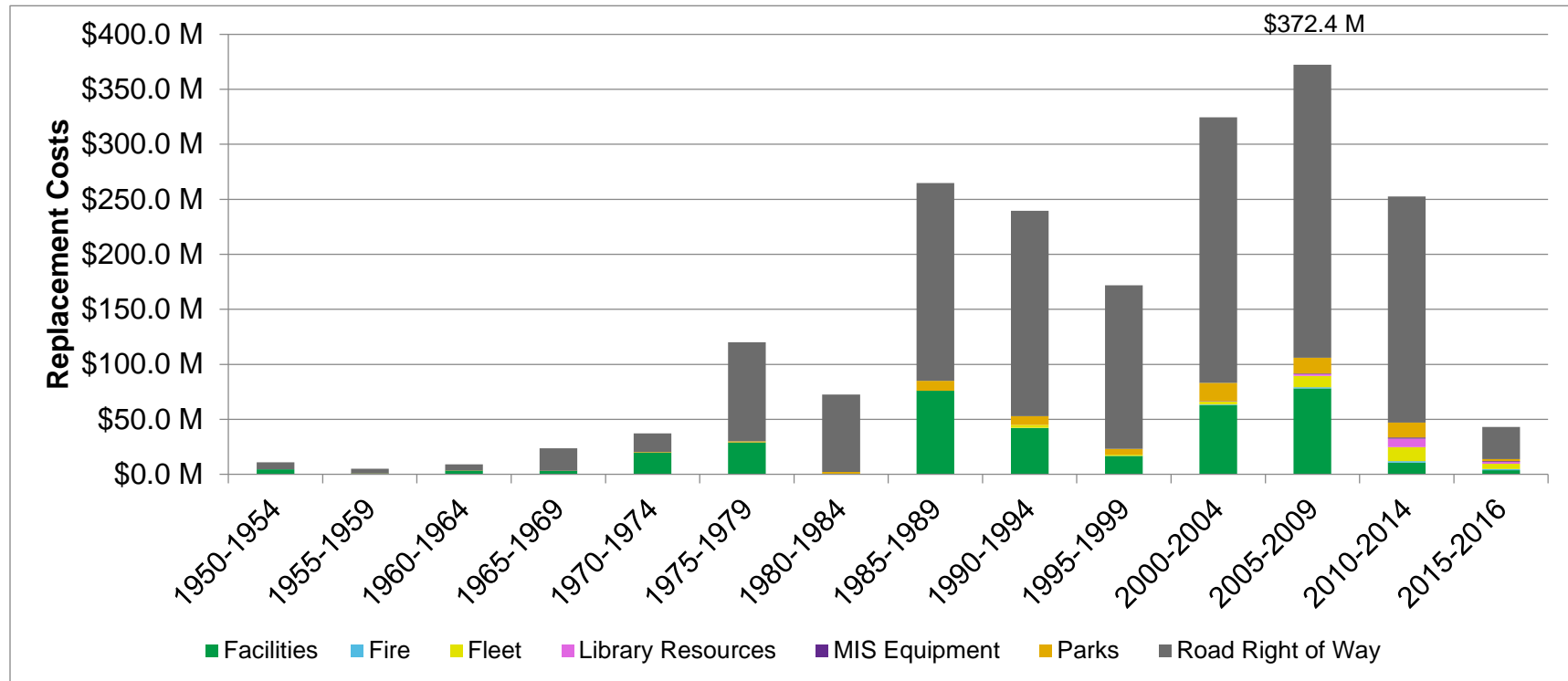
Table 2-16 Asset Useful Life in Years: MIS Equipment

| Asset Class         | Asset Type                                      | Expected Useful Life |
|---------------------|-------------------------------------------------|----------------------|
| Network Appliances  | Switches                                        | 5                    |
|                     | Storage Arrays                                  | 5                    |
|                     | Security Appliances                             | 5                    |
|                     | Wi-Fi Access Points                             | 5                    |
| Servers             | Tape Backup Devices                             | 5                    |
|                     | VM Servers                                      | 5                    |
|                     | Physical Servers                                | 5                    |
| Workstations        | Desktops                                        | 5                    |
|                     | Laptops                                         | 4                    |
|                     | Tablets                                         | 3                    |
| Peripherals         | Large Multifunction copiers                     | 5                    |
|                     | Network Printers                                | 5                    |
|                     | Monitors                                        | 5                    |
|                     | Scanners                                        | 3                    |
|                     | Projectors                                      | 3                    |
|                     | Rack Mounted<br>Uninterrupted Power<br>Supplies | 5                    |
| Tele-Communications | PBX Equipment                                   | 15                   |
|                     | Digital Telephone Sets                          | 10                   |
|                     | IP Telephone Sets                               | 10                   |
| Infrastructure      | External Fibre Cable                            | 35                   |

## 2.5.1 Installation Profile: Infrastructure Investment in Whitby

Figure 2-20 Aggregate Installation Profile illustrates the level of investment in Whitby's seven Service Areas since the 1950s.

Figure 2-20 Aggregate Installation Profile



Investments in infrastructure began to rise gradually beginning in the 1950s. However, reflecting the surge in population growth as shown in Figure 1-3, spending grew rapidly in the 1980s, totalling more than \$330 million between 1980 and 1989, of which more than \$244 million was allocated to Road Right of Way. Since 2005, the municipality's infrastructure spending has totalled more than \$647 million, of which \$488 was attributed to Right of Way and \$82 to Facilities.

## 3. Levels of Service

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### 3.1 Overview of Performance Management

Beyond meeting regulatory requirements, established levels of service (LOS) should support the intended purpose of the asset and its anticipated impact on the community and the municipality. The following guiding principles have been established for the LOS that each service should strive to provide internally to the organization (Town of Whitby) and externally to customers and regulators.

- **Available:** Services of sufficient capacity are convenient and accessible to the entire community
- **Cost Effective:** Services are provided at the lowest possible cost for both current and future customers, for a required level of service, and are affordable
- **Reliable:** Services are predictable and continuous
- **Responsive:** Opportunities for community involvement in decision making are provided; and customers are treated fairly and consistently, within acceptable timeframes, demonstrating respect, empathy and integrity
- **Safe:** Services are delivered such that they minimize health, safety and security risks
- **Suitable:** Services are suitable for the intended function (fit for purpose)
- **Sustainable:** Services respect the natural and heritage environment.

While the above guiding principles provide broad strategic direction to Council and staff, specific and measurable KPIs related to each LOS category are needed to ensure the Town remains committed in its pursuit of delivering the highest value for money to various internal and external stakeholders.

## 3.2 Risk Management & Prioritization

Generally speaking, infrastructure needs exceed municipal capacity. As such, municipalities must carefully select projects based on the state of infrastructure, economic development goals, and the needs of an evolving and growing community. These factors, along with social and environmental considerations form the basis of a robust risk management framework.

Risk mitigation is traditionally thought of in terms of safety and liability factors. In asset management, the definition of risk should heavily emphasize these factors but should be expanded to consider the risks to the Town's ability to deliver targeted levels of service

From an asset management perspective, risk is a function of:

- The Consequences of Failure (CoF): the negative economic, financial, and social consequences of an asset in the event of a failure; and
- The Probability of Failure (PoF) is how likely the asset is to fail in the short- or long-term.

Using the logic above, risk matrices will illustrate each asset's overall risk, determined by multiplying the probability of failure (PoF) scores with the consequence of failure (CoF) score.

### 3.2.1 Risk - Consequence of Failure

The consequences of failure are typically reflective of:

- An asset's importance in an overall system
- The criticality of the function performed
- The exposure of the public and/or staff to injury or loss of life

Figure 3-1 below illustrates a range of risk factors and describes, in general terms, how the consequences of asset failure can be evaluated relative to each factor. The weightings placed on the various factors should reflect the criticality of each asset and the degree to which the public is directly exposed to risk.

Figure 3-1 Risk - Consequence of Failure

|                   | <b>Level of Service</b>                                                                     | <b>Other Assets</b>                                                  | <b>Economic Efficiency</b>                                                             | <b>Life, Safety and Liability</b>                                   |
|-------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| <b>High (5)</b>   | The asset will cease to function and service will be unavailable to many users              | Other assets will not be functional or will deteriorate more quickly | Opportunities for significant life extending/cost-saving rehabilitation will be missed | The asset's failure could lead directly to loss of life or injury   |
| <b>Medium (3)</b> | The asset will still function but the quality of the service will be reduced for many users | The functionality of other assets will be reduced                    | Opportunities for moderate life extending rehabilitation will be missed                | The asset's failure could lead indirectly to loss of life or injury |
| <b>Low (1)</b>    | The asset will function but the quality of the service will be reduced for a few users      | The function or condition of other assets will not be impacted       | Replacement at failure is the only efficient option and can be easily accomplished     | The potential for minor claims is increased                         |

Table 3-1 to Table 3-7 show the consequence of failure scores for the various asset classes within each service area.



Table 3-1 Consequence of Failure: Road Right of Way

| Asset Class                | Criteria                | Consequence of Failure | Description                                                                                                                                    |
|----------------------------|-------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Road Surface & Base        | 20,001 AADT or above    | 5                      | Major roadway; assets failure will compromise critical services and severely impede traffic flow; public safety is impacted; high value assets |
|                            | 10,001-20,000 AADT      | 4                      | Assets are high use, and their failure may result in injury to public and service may likely be compromised; high value assets                 |
|                            | 3,001-10,000 AADT       | 3                      | Medium traffic volume; local services may be compromised; risk to public safety remains a factor                                               |
|                            | 1,001-3,000 AADT        | 2                      | Low to medium traffic volume; minor, but noticeable impact on traffic flow; public safety remains a factor; lower value assets                 |
|                            | 10-1,000 AADT           | 1                      | Low value assets; low traffic volume, and low service criticality.                                                                             |
| Bridges/ Culverts 3m+      | \$2,000,000 and above   | 5                      | High value asset; high service criticality; public safety a factor                                                                             |
|                            | \$500,001 - \$2,000,000 | 4                      | Medium to high value asset; high service criticality; public safety a factor                                                                   |
|                            | \$50,001 - \$500,000    | 3                      | Medium value asset; medium service criticality; public safety a factor                                                                         |
|                            | \$5,001 - \$50,000      | 2                      | Low to medium value asset; minimal service criticality                                                                                         |
|                            | Up to \$5,000           | 1                      | Low value asset; easily replaced; no service criticality                                                                                       |
| Pedestrian Bridges         | N/A                     | 3                      | Medium value asset; medium service criticality; public safety a factor                                                                         |
| Culverts 0 to 3m           | N/A                     | 1                      | Low value asset; easily replaced; no service criticality                                                                                       |
| Sidewalks                  | N/A                     | 3                      | Medium value asset; medium service criticality; public safety a factor                                                                         |
| Multi-Use Paths            | N/A                     | 3                      | Medium value asset; medium service criticality; public safety a factor                                                                         |
| Meters                     | N/A                     | 1                      | Low value asset; easily replaced; no service criticality                                                                                       |
| Public Lots – Surface/Base | N/A                     | 2                      | Low to medium value asset; minimal service criticality                                                                                         |
| Parking Kiosks             | N/A                     | 1                      | Low value asset; easily replaced; no service criticality                                                                                       |

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| <b>Asset Class</b>      | <b>Criteria</b> | <b>Consequence of Failure</b> | <b>Description</b>                                                           |
|-------------------------|-----------------|-------------------------------|------------------------------------------------------------------------------|
| Traffic Control Signals | N/A             | 4                             | Medium to high value asset; high service criticality; public safety a factor |
| Retaining Walls         | N/A             | 3                             | Medium value asset; medium service criticality; public safety a factor       |
| Fences                  | N/A             | 1                             | Low value asset; easily replaced; no service criticality                     |
| Guiderails              | N/A             | 4                             | Medium to high value asset; high service criticality; public safety a factor |
| Information Signs       | N/A             | 4                             | Medium to high value asset; high service criticality; public safety a factor |
| Storm Sewers            | >900 mm         | 5                             | High value asset; high service criticality; public safety a factor           |
|                         | 750-825 mm      | 4                             | Medium to high value asset; high service criticality; public safety a factor |
|                         | 600-675 mm      | 3                             | Medium value asset; medium service criticality; public safety a factor       |
|                         | 450-525 mm      | 2                             | Low to medium value asset; minimal service criticality                       |
|                         | 0-375 mm        | 1                             | Low value asset; easily replaced; no service criticality                     |
| Major Channels          | N/A             | 4                             | Medium to high value asset; high service criticality; public safety a factor |
| Storm Water Ponds       | N/A             | 4                             | Medium to high value asset; high service criticality; public safety a factor |
| Street Lights           | N/A             | 1                             | Low value asset; easily replaced; no service criticality                     |
| Street Trees            | N/A             | 1                             | Low value asset; easily replaced; no service criticality                     |

Table 3-2 Consequence of Failure: Parks

| Asset Class             | Consequence of Failure | Description                                                                                                                                                                                       |
|-------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Not Applicable          | 5                      | Assets are critical to the essential services the Town provides, direct impact on public safety, public confidence and perception, assets are typically more expensive and take longer to replace |
| Recreation Facilities   | 4                      | Assets are high use, and their failure may result in injury to public and the municipality may be held liable; direct impact on public safety; high value assets                                  |
| Paved Surfaces          | 3                      | Disruption in traffic, reduced access; less critical than facilities but impact on safety may remain a factor; medium value assets                                                                |
| Amenities and Furniture | 2                      | Low service criticality; replacement cost is low and asset is easily replaced                                                                                                                     |

Table 3-3 Consequence of Failure: Facilities

| Asset Class                         | Consequence of Failure | Description                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fire Halls                          | 5                      | Assets have critical impact on public safety; assets failure compromises public safety and delivery of critical services; high value assets. If left uncorrected, the problem increases the potential for serious or continued damage to buildings, building components, or infrastructure systems, and may negatively impact the facility's ability to deliver programs. |
| Pumping Stations                    | 5                      |                                                                                                                                                                                                                                                                                                                                                                           |
| Operations Facilities               | 5                      |                                                                                                                                                                                                                                                                                                                                                                           |
| Municipal Building                  | 5                      |                                                                                                                                                                                                                                                                                                                                                                           |
| Sports Facilities                   | 5                      |                                                                                                                                                                                                                                                                                                                                                                           |
| Brooklin Community Centre & Library | 4                      | Assets are high use, and their failure may result in injury to public and the municipality may be held liable; direct impact on public safety; high value assets                                                                                                                                                                                                          |
| Community Centres                   | 3                      | Less critical than Sports Facilities but impact on safety may remain a factor; medium value assets                                                                                                                                                                                                                                                                        |
| Other Town Property                 | 2                      | Low service criticality; replacement cost is low and asset is easily replaced                                                                                                                                                                                                                                                                                             |
| Parking Lots                        | 2                      |                                                                                                                                                                                                                                                                                                                                                                           |

Table 3-4 Consequence of Failure: Fleet

| Asset Class                     | Consequence of Failure | Description                                                                                                                                       |
|---------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Fire Trucks                     | 5                      | Assets have critical impact on public safety; assets failure compromises public safety and delivery of critical services; high value assets       |
| Snow Equipment                  | 5                      |                                                                                                                                                   |
| Construction Equipment/Vehicles | 4                      | Assets are high use, and their failure may compromise service delivery and/or injury to public; direct impact on public safety; high value assets |
| Refuse Trucks                   | 4                      |                                                                                                                                                   |
| Arena Equipment                 | 3                      | Less critical than Sport Facilities but impact on safety may remain a factor; medium value assets and medium service criticality                  |
| Passenger Vehicles              | 2                      | Medium service criticality and low replacement cost                                                                                               |
| Garage & Shop Equipment         | 2                      |                                                                                                                                                   |
| Lawn Care & Forestry            | 1                      | Low service criticality; replacement cost is low and asset is easily replaced                                                                     |
| Trailers                        | 1                      |                                                                                                                                                   |

Table 3-5 Consequence of Failure: Library

| Asset Class | Asset Types                 | Consequence of Failure | Description                                                                                                                                                                                        |
|-------------|-----------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Collections | All Collections             | 1                      | Very low service criticality; replacement cost is very low and asset is easily replaced                                                                                                            |
| Equipment   | Servers                     | 5                      | Assets are critical to the essential services the Town provides, direct impact on public safety, public confidence and perception, assets are typically more expensive and take longer to replace. |
|             | Network Hardware            | 5                      | Assets are critical to the essential services the Town provides, direct impact on public safety, public confidence and perception, assets are typically more expensive and take longer to replace. |
|             | Desktop Computers / Laptops | 2                      | Low service criticality; replacement cost is low and asset is easily replaced                                                                                                                      |
|             | Peripherals                 | 1                      | Very low service criticality; replacement cost is very low and asset is easily replaced                                                                                                            |
|             | Monitors                    | 1                      | Very low service criticality; replacement cost is very low and asset is easily replaced                                                                                                            |

Table 3-6 Consequence of Failure: Fire

| Asset Class | Consequence of Failure | Description                                                                                                                                                      |
|-------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PPE         | 5                      | Assets are high use, and their failure may result in injury to public and the municipality may be held liable; direct impact on public safety; high value assets |
| Equipment   | 5                      |                                                                                                                                                                  |

Table 3-7 Consequence of Failure: MIS Equipment

| Asset Class         | Consequence of Failure | Description                                                                                                                   |
|---------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Servers             | 5                      | High service criticality with direct impact on service delivery and municipal datasets                                        |
| Network Appliances  | 5                      |                                                                                                                               |
| Tele-communications | 4                      | High value assets central to service provision                                                                                |
| Infrastructure      | 3                      | Medium value assets with medium level service criticality; required to provide services but no direct impact on public safety |
| Workstations        | 2                      | Low value assets with minimal service criticality; assets are easily replaced                                                 |
| Peripherals         | 1                      | Low value assets without service criticality; assets are easily replaced                                                      |

### 3.2.2 Risk – Probability of Failure

The probability of failure is based solely on the assessed condition of all Town assets, which is heavily influenced by the asset's age and the amount of investment that has been made in the maintenance and renewal of the asset throughout its life. Table 3-8 illustrates the various probability of failure ratings.

Table 3-8 Probability of Failure Rating

| Condition Rating | Probability of Failure |
|------------------|------------------------|
| 1 - Very Poor    | 5 – Very High          |
| 2 - Poor         | 4 – High               |
| 3 - Fair         | 3 – Moderate           |
| 4 - Good         | 2 – Low                |
| 5 - Very Good    | 1 – Very Low           |

### 3.2.3 Risk – Prioritization Matrices

The consequence of failure scores are multiplied by the respective probability of failure scores to determine an asset's overall risk-prioritization score. The sample risk-prioritization matrix as shown in Figure 3-3 graphically illustrates an asset's risk exposure and priority.

The lowest risk-prioritization scores (shown in blue) range from 1 to 4, and the highest risk-prioritization scores (shown in magenta) range from 15 to 25. Assets in the magenta areas should be given the highest priority for replacement, rehabilitation or repair. Assets in the yellow and orange areas should be monitored and the risk evaluated on an appropriate schedule.

Figure 3-2 Risk - Prioritization Matrix

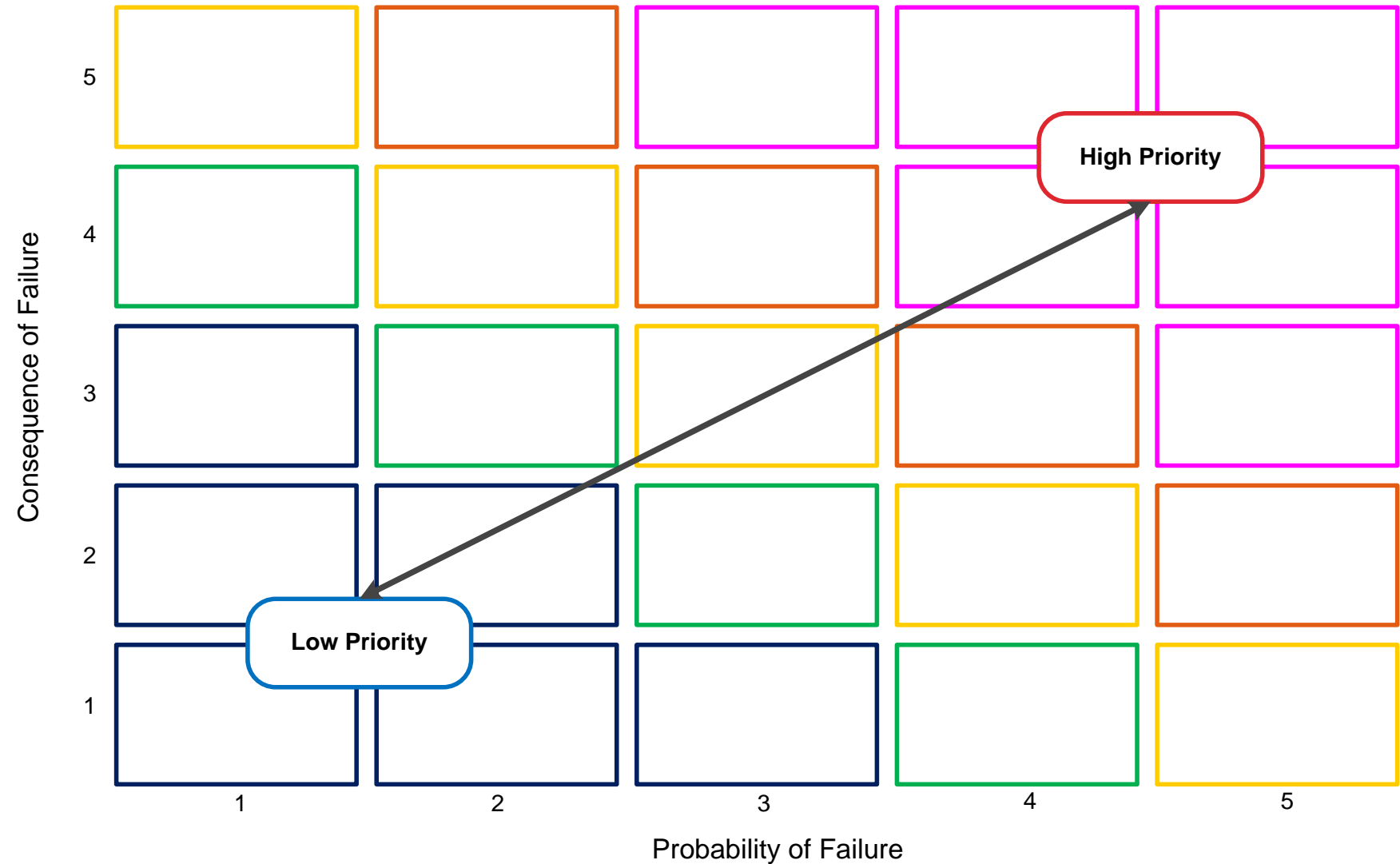


Figure 3-3 to Figure 3-10 illustrate the risk-prioritization matrices for each of the Town's Service Areas

Figure 3-3 Risk Matrix – All Service Areas

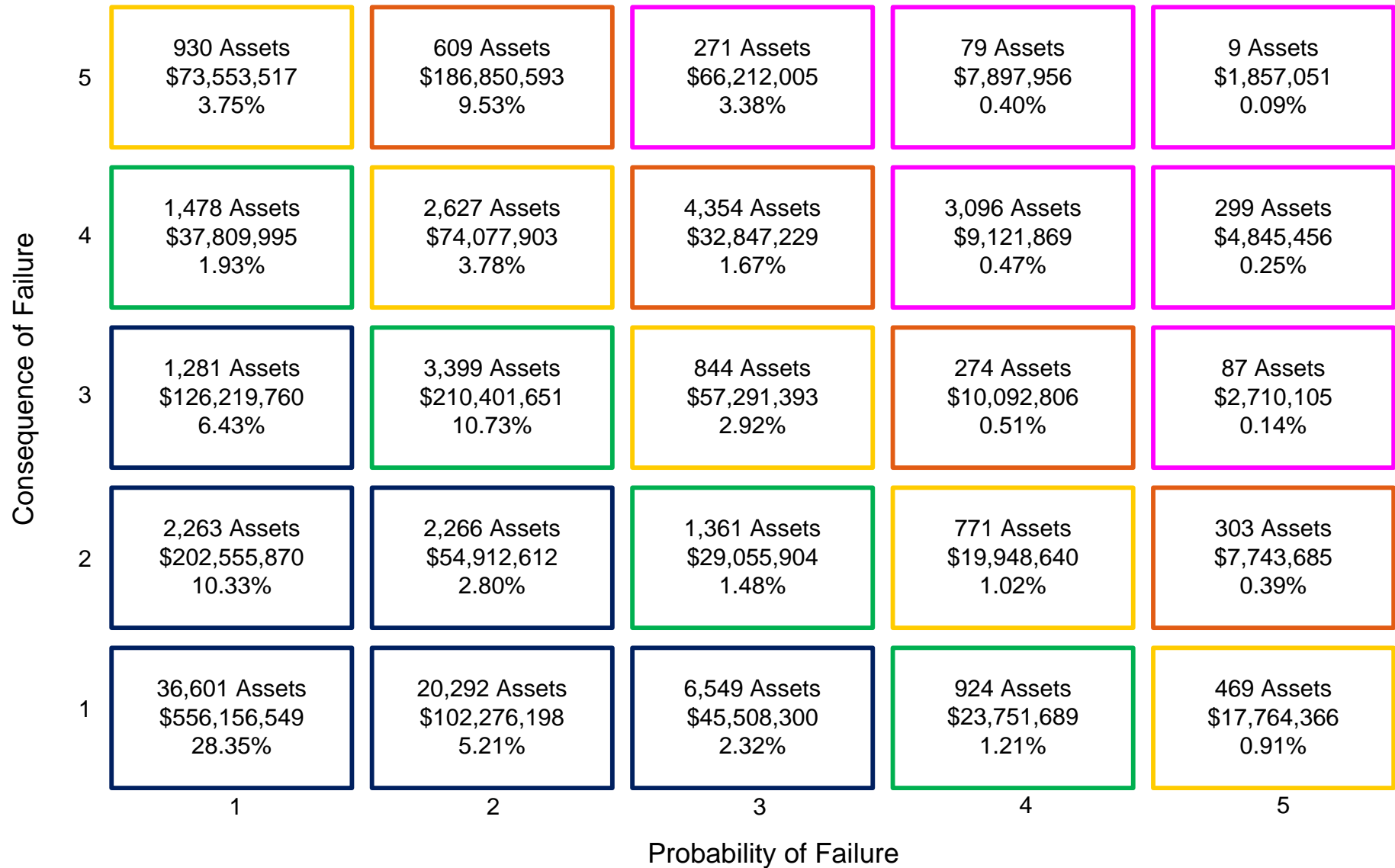




Figure 3-4 Risk Matrix – Road Right of Way

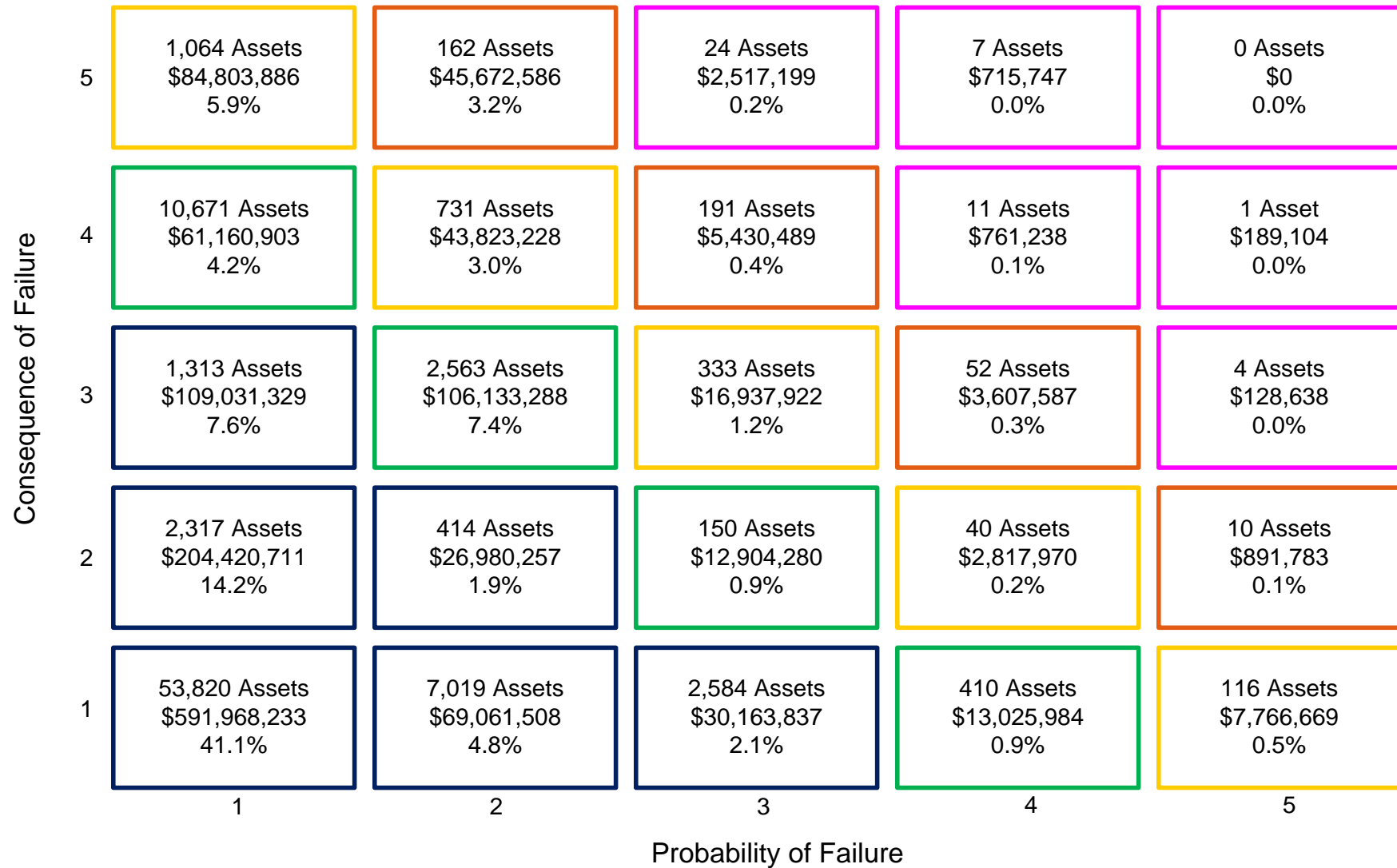


Figure 3-5 Risk Matrix –Parks

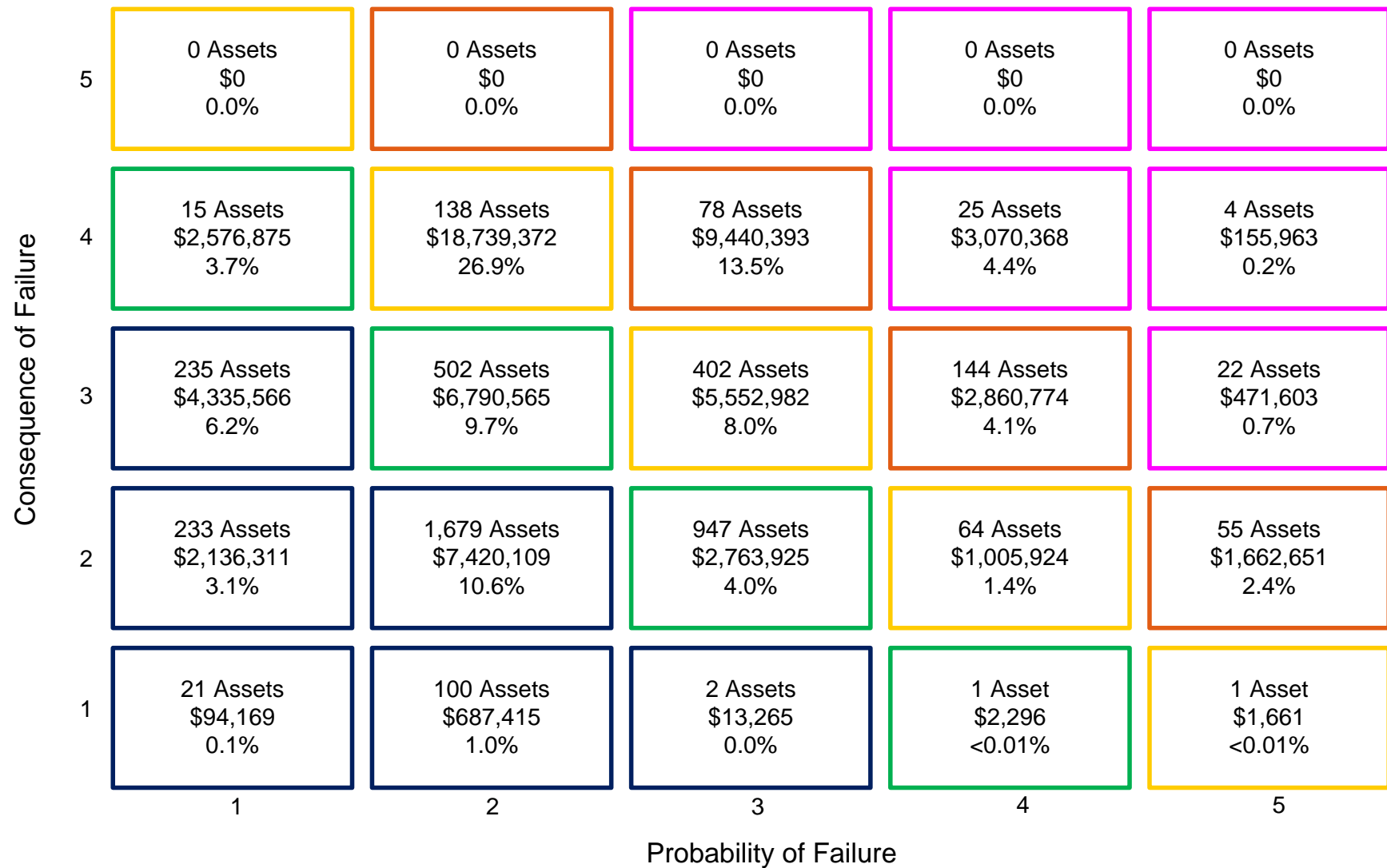


Figure 3-6 Risk Matrix –Facilities

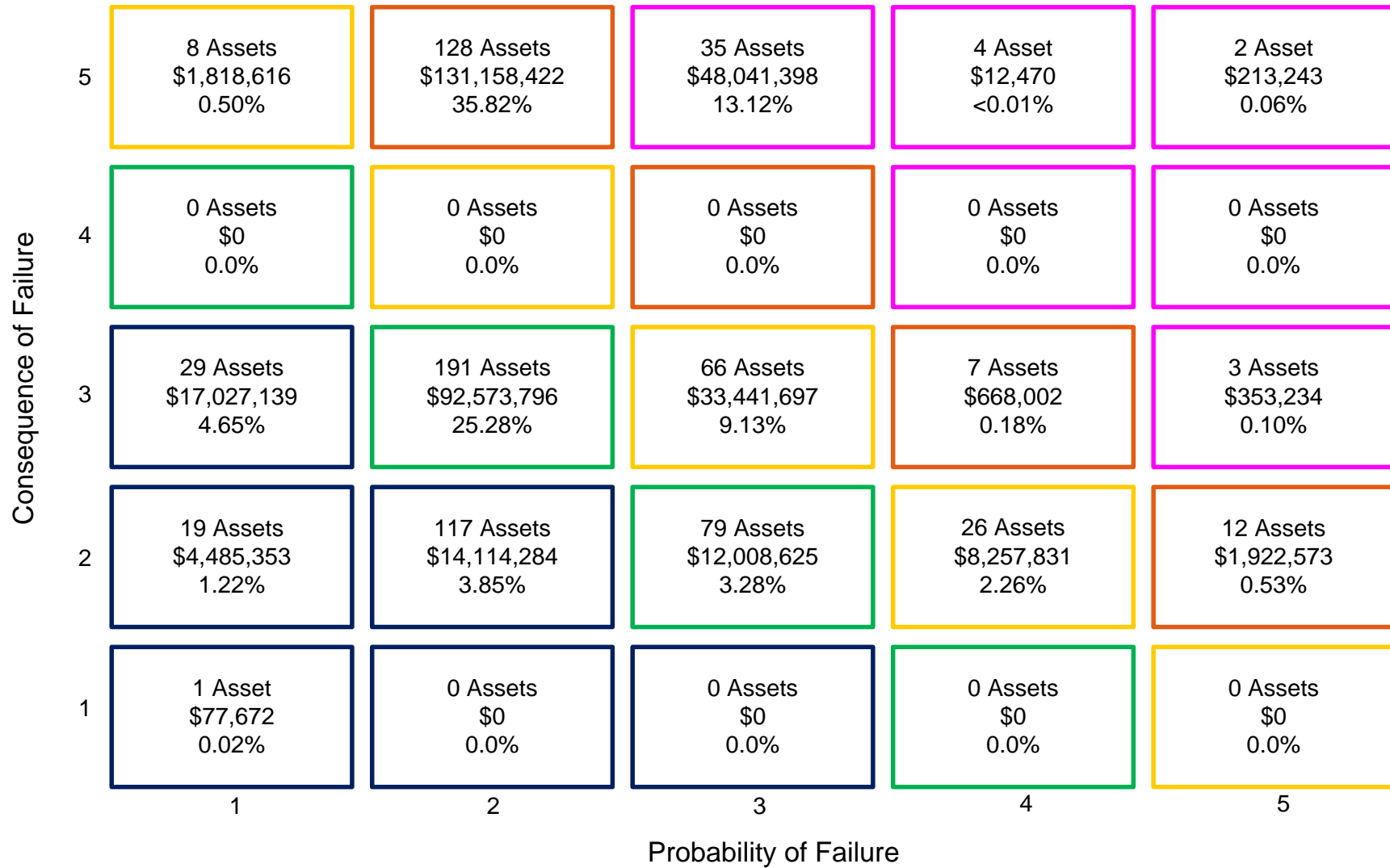


Figure 3-7 Risk Matrix –Fleet

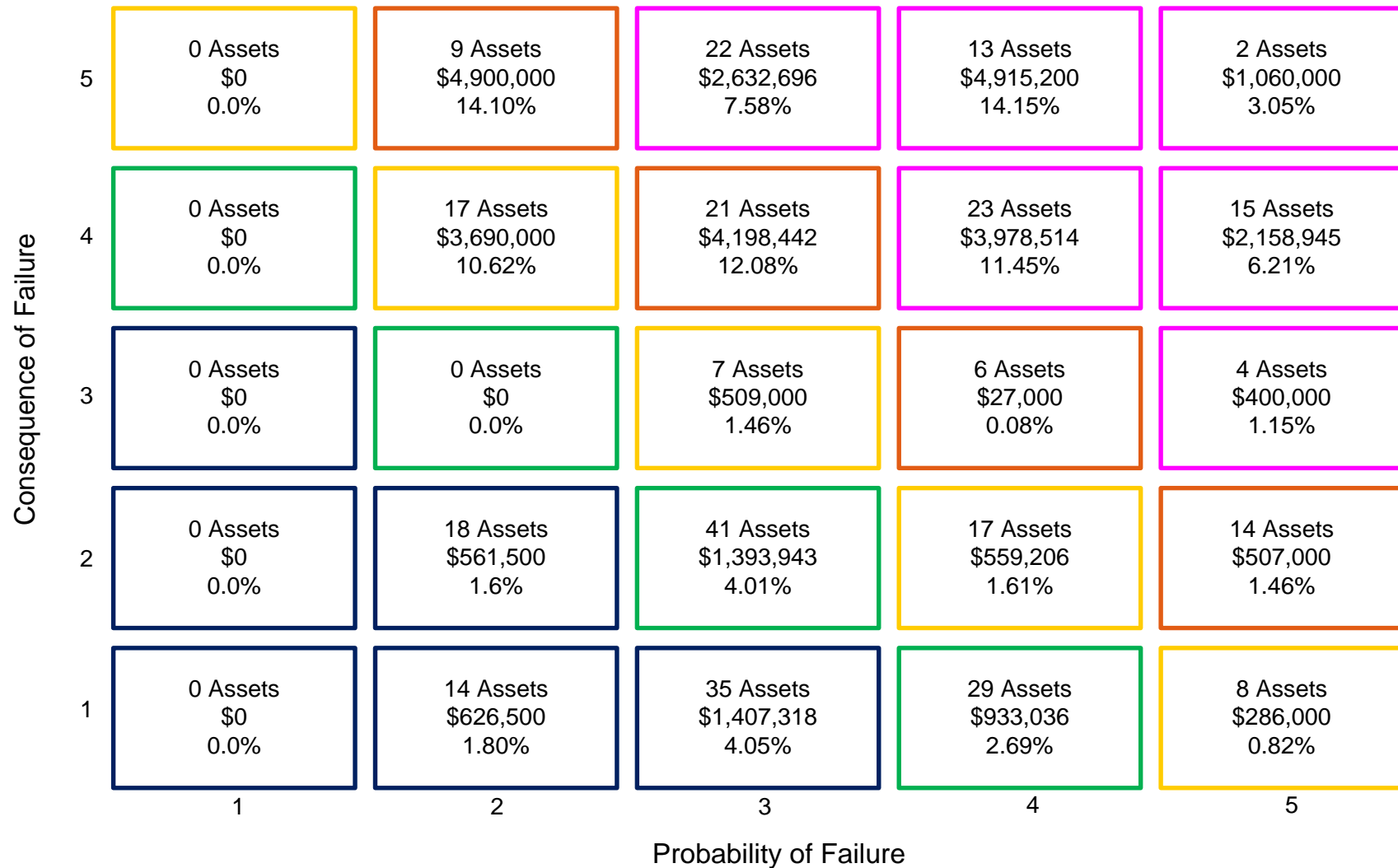


Figure 3-8 Risk Matrix –Library

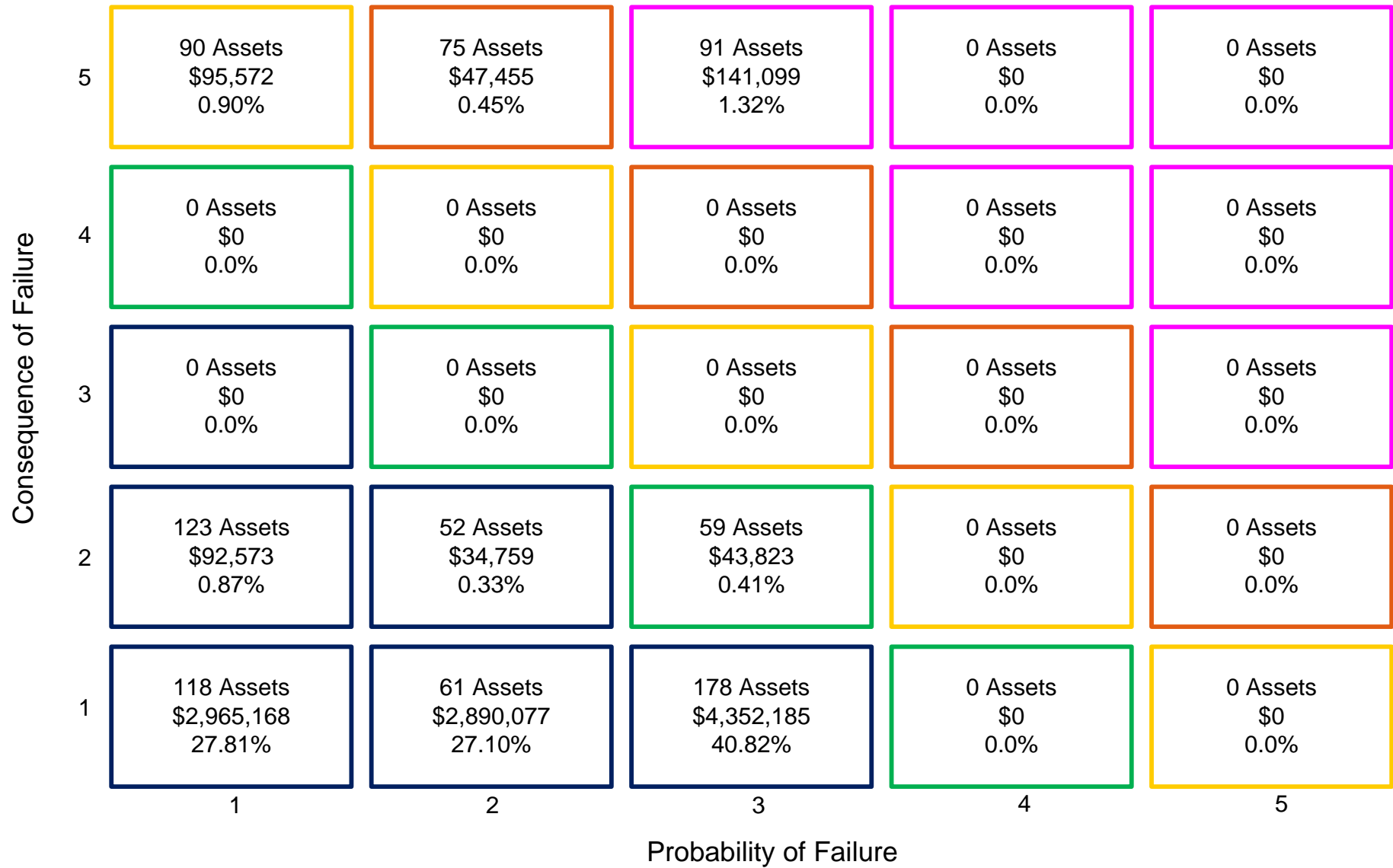


Figure 3-9 Risk Matrix –Fire

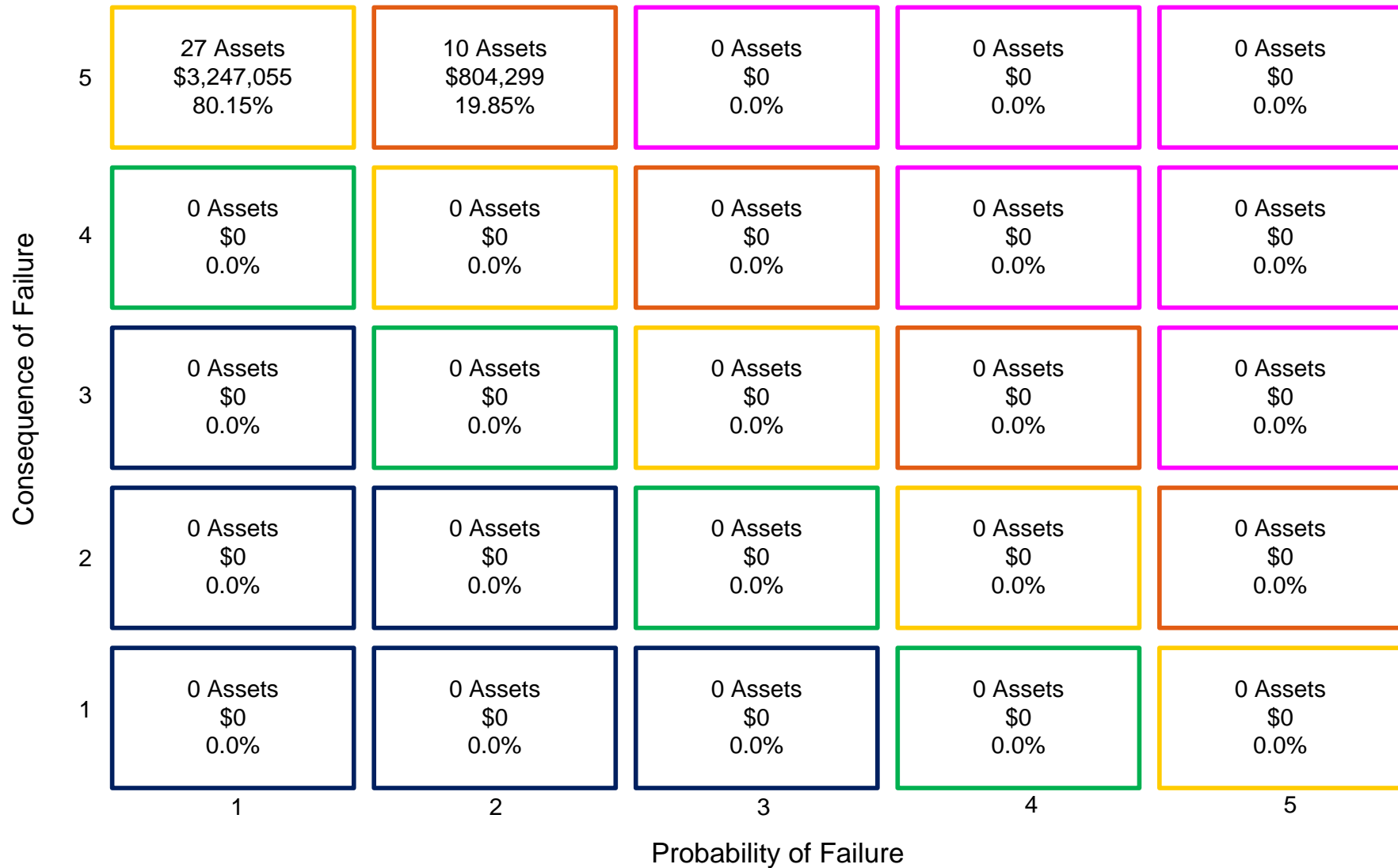
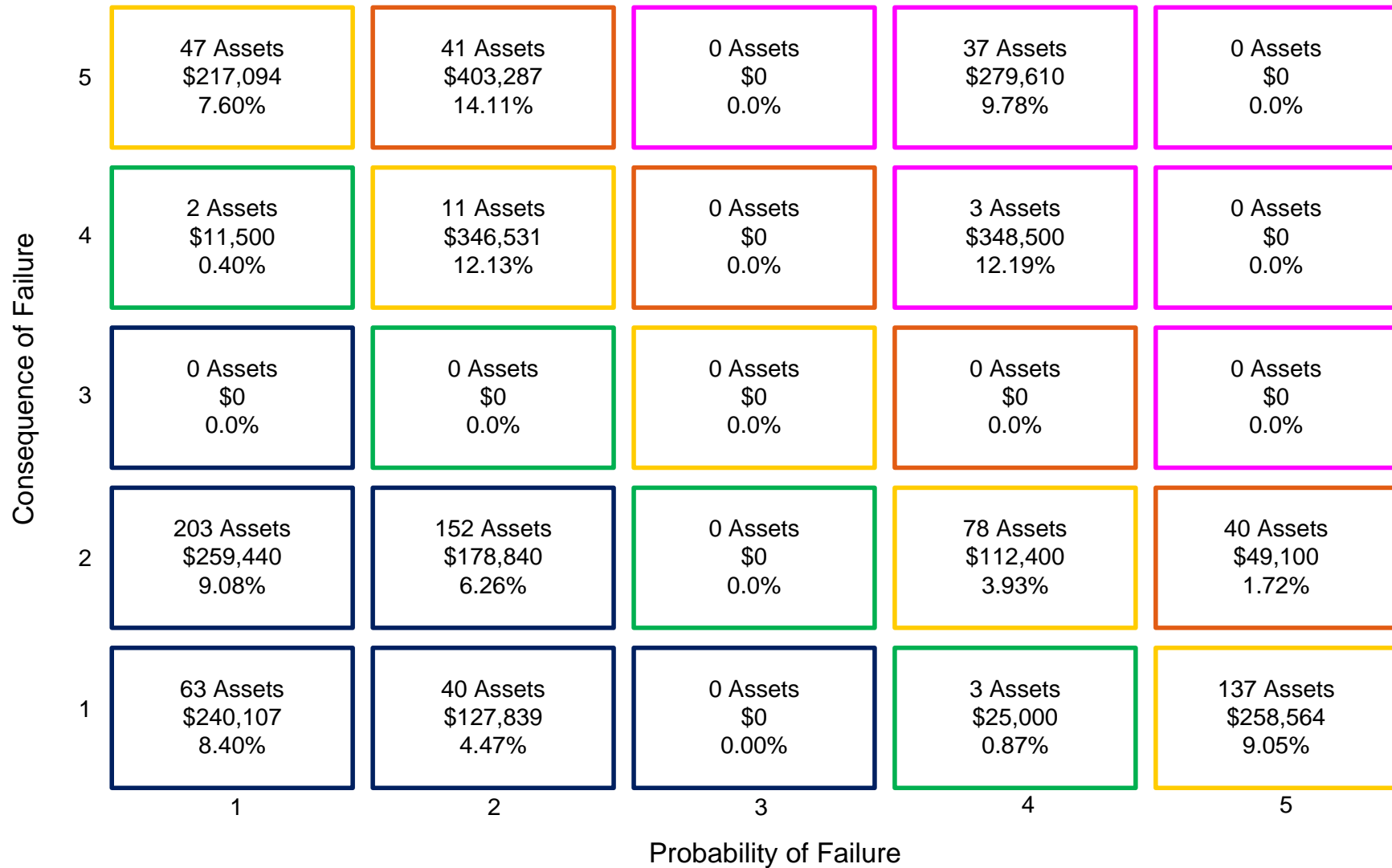


Figure 3-10 Risk Matrix –MIS Equipment



### **3.3 Key Performance Indicators and Targets**




















A key component of a performance measurement framework is to understand whether or not we can provide a credible answer to the question: Are we making progress toward achieving our targeted results?

The LOS objectives are typically supported by one or more key performance indicators (KPIs) or measures that help quantify the services to be delivered such as how much, how frequently, and of what nature. KPIs are quantitative measures of a service or activity that can be used to compare actual outcomes or outputs against a standard or target. KPIs have been established using industry standards and best practices, as well as input from the community.

As shown in Table 3-9 to Table 3-15, the Town has developed the following KPIs for its seven Service Areas.



Table 3-9 Key Performance Indicators – Road Right of Way

| Asset Class                            | KPI Target – Condition Related                                                                                                                                                                                                                                                                                                           | Current Level                                                                                                                                                                                    | KPI Status                                                                                                                                                                                                                                                          | Previous Level                                                                                                                                                                                                                                                      | KPI Trend                                                                                                                                                                      |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Roads</b>                           | <ul style="list-style-type: none"> <li>More than 75% of HCB1 and HCB2 are in Good or better condition (PCR 50-100) Less than 5% are in Poor or worse condition (PCR &lt;40).</li> <li>More than 75% of HCB3 and HCB4 are in Fair or better condition (PCR 40-100). Less than 10% of HCB3 and HCB4 are in Very Poor condition.</li> </ul> | <ul style="list-style-type: none"> <li>61.6% of HCB1/HCB2 and 75% HCB3/HCB4 in Good or Excellent condition</li> <li>6% of HCB1/HCB2 and 5.5% HCB3/HCB4 in Poor to Very Poor condition</li> </ul> | <br><br>                                                                                      | <br><br>                                                                                      | <br><br> |
| <b>Bridges &amp; Culverts</b>          | <ul style="list-style-type: none"> <li>More than 85% of bridge and culvert assets in Good or Excellent condition (BCI 70 – 100) and less than 1% in Poor or Very Poor condition</li> </ul>                                                                                                                                               | <ul style="list-style-type: none"> <li>95% in Good to Excellent condition</li> </ul>                                                                                                             |                                                                                                                                                                                  |                                                                                                                                                                                  |                                                                                             |
| <b>Sidewalks &amp; Multi-Use Paths</b> | <ul style="list-style-type: none"> <li>At least 50% of sidewalks in Good or Excellent condition rating 4 or 5. Less than 1% in Very Poor condition</li> </ul>                                                                                                                                                                            | <ul style="list-style-type: none"> <li>97% in Good to Excellent condition</li> </ul>                                                                                                             |                                                                                                                                                                                  |                                                                                                                                                                                  |                                                                                             |
| <b>Parking</b>                         | <ul style="list-style-type: none"> <li>Meters – More than 80% in Fair or better condition</li> <li>Kiosks – More than 95% in Fair or better condition</li> <li>Parking Lots – Less than 5% should be in Poor or Very Poor condition</li> </ul>                                                                                           | <ul style="list-style-type: none"> <li>86% of meters Fair or better condition</li> <li>90% of kiosks in Fair or better condition</li> <li>0% in Poor or Very Poor Condition</li> </ul>           | <br><br> | <br><br> |                                                                                             |

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| Asset Class                   | KPI Target – Condition Related                                                                                                                                                                                                                                                                               | Current Level                                                                                                                                                                                                                                                                                                | KPI Status                                                                                                                                                                                                                                                                                                                                               | Previous Level                                                                                                                                                                                                                                                                                                                                           | KPI Trend |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Roadside Appurtenances</b> | <ul style="list-style-type: none"> <li>Signs – Less than 1% in Poor or Very Poor condition</li> <li>Guiderails – Less than 1% in Poor or Very Poor condition</li> <li>Fences – Less than 5% in Poor or Very Poor condition</li> <li>Retaining Walls – Less than 5% in Poor or Very Poor condition</li> </ul> | <ul style="list-style-type: none"> <li>The majority of signs are in Poor or Very Poor condition</li> <li>Less than 1% of guiderails in Poor or Very Poor condition</li> <li>Less than 4% of fences in Excellent condition</li> <li>Less than 2% of retaining walls in Poor or Very Poor condition</li> </ul> | <br><br><br> | <br><br><br> | ↓         |
| <b>Street Lights</b>          | <ul style="list-style-type: none"> <li>Less than 1% of street lights luminaries and poles along arterial roads are in Poor or Very Poor condition</li> <li>Less than 5% of streetlights luminaries and poles along local and collector are in Poor or Very Poor condition</li> </ul>                         | <ul style="list-style-type: none"> <li>Less than 1% of all streetlight luminaries and poles along arterial roads are in Poor or Very Poor condition</li> <li>Less than 1% of all streetlight luminaires and poles along local roads are in Poor or Very Poor condition</li> </ul>                            | <br>                                                                                                                                                                               | <br>                                                                                                                                                                               | =         |
| <b>Street Trees</b>           | <ul style="list-style-type: none"> <li>Less than 1% are in Poor or Very Poor condition</li> </ul>                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>14% in Poor to Very Poor condition</li> </ul>                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                     | =         |
| <b>Stormwater Management</b>  | <ul style="list-style-type: none"> <li>Storm Lines – Less than 5% are in Poor to Very Poor condition</li> <li>Storm Ponds – Less than 5% are in Poor to Very Poor condition</li> </ul>                                                                                                                       | <ul style="list-style-type: none"> <li>Less than 2% of storm lines in Poor to Very Condition</li> <li>Less than 4% of storm ponds in Poor to Very Poor condition</li> </ul>                                                                                                                                  | <br>                                                                                                                                                                           | <br>                                                                                                                                                                           | =         |

Table 3-10 Key Performance Indicators - Parks

| Asset Class                  | KPI Target – Condition Related                     | Current Level | KPI Status | Previous Level | KPI Trend |
|------------------------------|----------------------------------------------------|---------------|------------|----------------|-----------|
| Arboriculture & Horticulture | At least 95% of assets in fair or better condition | 100%          | ✓          | ✓              | =         |
| Paved Surfaces               | At least 90% of assets in fair or better condition | 82%           | ✗          | ✗              | =         |
| Recreation Facilities        | At least 85% of assets in fair or better condition | 91%           | ✓          | ✓              | ↑         |
| Amenities and Furniture      | At least 80% of assets in fair or better condition | 80%           | ✗          | ✓              | ↓         |

Table 3-11 Key Performance Indicators – Facilities

| Asset Class           | KPI Target – Condition Related                                                                       | Current Level                               | KPI Status | Previous Level | KPI Trend |
|-----------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------|------------|----------------|-----------|
| Community Centres     | At least 75% of assets in good or better condition and <1% of assets in Poor or Very Poor condition. | 76 % Good or better<br>1.2 % Poor or worse  | ✓<br>✗     | ✓<br>✓         | ↓         |
| Fire Hall             | At least 75% of assets in good or better condition and <1% of assets in Poor or Very Poor condition. | 81 % Good or better<br>0 % Poor or worse    | ✓<br>✓     | ✓<br>✓         | =         |
| Municipal Building    | At least 75% of assets in good or better condition and <1% of assets in Poor or Very Poor condition. | 81 % Good or better<br>0 % Poor or worse    | ✓<br>✓     | ✓<br>✓         | =         |
| Operations Facilities | At least 75% of assets in good or better condition and <1% of assets in Poor or Very Poor condition. | 73 % Good or better<br>1.01 % Poor or worse | ✗<br>✗     | ✗<br>✓         | ↓         |

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| Asset Class         | KPI Target – Condition Related                                                                       | Current Level                             | KPI Status                                                                                                                                                                 | Previous Level                                                                                                                                                             | KPI Trend |
|---------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Other Town Property | At least 75% of assets in good or better condition and <1% of assets in Poor or Very Poor condition. | 51 % Good or better<br>22 % Poor or worse | <br> | <br> | =         |
| Sports Facilities   | At least 75% of assets in good or better condition and <1% of assets in Poor or Very Poor condition. | 71 % Good or better<br><1 % Poor or worse | <br> | <br> | =         |

Table 3-12 Key Performance Indicators – Fleet



















| Asset Class             | KPI Target – Condition Related                      | Current Level | KPI Status                                                                            | Previous Level                                                                        | KPI Trend |
|-------------------------|-----------------------------------------------------|---------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------|
| Passenger Vehicles      | At least 70% of assets in fair or better condition. | 84%           |    |    | =         |
| Construction Equipment  | At least 80% of assets in fair or better condition. | 72%           |    |    | ↓         |
| Trailers                | At least 80% of assets in fair or better condition. | 86%           |    |    | =         |
| Fire Trucks             | At least 95% of assets in fair or better condition. | 93%           |    |    | =         |
| Lawn Care & Forestry    | At least 60% of assets in fair or better condition. | 84%           |   |   | =         |
| Refuse Trucks           | At least 80% of assets in fair or better condition. | 100%          |  |  | =         |
| Arena Equipment         | At least 80% of assets in fair or better condition. | 57%           |  |  | =         |
| Snow Equipment          | At least 95% of assets in fair or better condition. | 91%           |  |  | =         |
| Garage & Shop Equipment | At least 70% of assets in fair or better condition. | 52%           |  |  | =         |



















Table 3-13 Key Performance Indicators - Library

| Asset Class | KPI Target – Condition Related                      | Current Level | KPI Status | Previous Level | KPI Trend |
|-------------|-----------------------------------------------------|---------------|------------|----------------|-----------|
| Collections | At least 80% of assets in fair or better condition. | 100%          | ✓          | ✓              | =         |
| Equipment   | At least 95% of assets in fair or better condition. | 100%          | ✓          | ✓              | =         |

Table 3-14 Key Performance Indicators - Fire

| Asset Class | KPI Target – Condition Related                       | Current Level | KPI Status | Previous Level | KPI Trend |
|-------------|------------------------------------------------------|---------------|------------|----------------|-----------|
| PPE         | At least 100% of assets in fair or better condition. | 100%          | ✓          | ✓              | =         |
| Equipment   | At least 100% of assets in fair or better condition. | 100%          | ✓          | ✓              | =         |

Table 3-15 Key Performance Indicators – MIS Equipment

| Asset Class         | KPI Target – Condition Related                                                                                                                 | Current Level | KPI Status                                                                          | Previous Level                                                                      | KPI Trend                                                                           |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Network Appliances  | At least 95% of assets in fair or better condition.<br><br>Critical Assets within this class must be at least 99% in good condition or better. | 66%           |  |  |  |
| Servers             | At least 95% of assets in fair or better condition.<br><br>Critical Assets within this class must be at least 99% in good condition or better. | 74%           |  |  |  |
| Workstations        | At least 95% of assets in fair or better condition.                                                                                            | 73%           |  |  |  |
| Peripherals         | At least 75% of assets in fair or better condition.                                                                                            | 94%           |  |  |  |
| Tele-communications | At least 95% of assets in fair or better condition.                                                                                            | 15%           |  |  |  |
| Infrastructure      | At least 95% of assets in fair or better condition.                                                                                            | 100%          |  |  |  |

### 3.4 Future Performance

In addition to the Financial Sustainability and legislative requirements, e.g., the *Accessibility for Ontarians with Disability Act*, many internal and external factors can influence the establishment of LOS and their associated KPIs, both target and actual.

The municipality's overarching strategic goals as a community will determine the types of services it will provide to its residents, the associated demand on infrastructure, and the level of service it can feasibly deliver. These LOS are directly influenced by and should reflect not only the municipality's financial capacity to maintain the assets, but also the current state of the infrastructure.

Public expectations and opinions can also play an important part in prioritizing investments in infrastructure and service delivery standards. The public should be consulted in establishing LOS; however, the discussions should be centred on clearly outlining the lifecycle costs associated with delivering any improvements in LOS. Citizenry expectations and insights will also reflect the demographic composition of the community. Further, a growing community can place added demand on critical infrastructure, and may reduce levels of service standards.

Lastly, the wider global context can have direct consequence on a municipality's capacity to provide established levels of service. Fluctuations in macroeconomic variables such as interest rates and fuel costs and environmental considerations such as climate change should be considered prior to making infrastructure investments and changing the municipality's asset portfolio.

### 3.5 Non-Infrastructure Solutions and Requirements

The municipality should explore, as requested through the provincial requirements, which non-infrastructure solutions should be incorporated into the budgets for its seven Service Areas. Non-Infrastructure solutions such as studies, policies, condition assessments, consultation exercises, etc., that could potentially extend the life of assets or lower total asset program costs in the future without a direct investment into the infrastructure.

Typical solutions for a municipality include linking the asset management plan to the strategic plan, growth and demand management studies, infrastructure master plans, better integrated infrastructure and land use planning, public consultation on levels of service, and condition assessment programs. As part of future asset management plans, a review of these requirements should take place and a portion of the capital budget should be dedicated for these items in each programs budget.

It is recommended under this category of solutions that the municipality should continue to implement holistic condition assessment programs for its capital assets. This will advance the understanding of infrastructure needs, improve budget prioritization methodologies, and provide clearer path of what is required to achieve sustainable infrastructure programs.

## **4. Asset Maintenance & Renewal Strategies**

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The Town of Whitby has established detailed maintenance and renewal strategies for each of its seven Service Areas. Details of these activities, including schedule of activity and the associated per unit costs, can be found in the Town's SAAMPs.

Within each SAAMP, this section identifies all of the capital lifecycle activities that are recommended to occur (and when they are expected to occur) over an asset's life in order to minimize total lifecycle costs. In general, the Level of Service recommended would allow the assets to deteriorate to a Grade C/D prior to a major rehabilitation being undertaken – while at the same time undertaking minor maintenance strategies throughout the lifecycle to extend the life of the asset as much as possible. However some assets such as bridges, fire equipment and facilities have been identified for higher Levels of Service for public safety reasons.



## 4.1 Condition Assessment Programs

Whereas legislative guidelines are available to guide condition assessment for some Service Areas and their asset classes, e.g., Parks, and Bridges & Culverts, assessment for other assets is modelled on industry standards. In general, condition assessments and inspections should involve qualified groups of trained industry professionals (operational staff, engineers, consulting groups, landscape architects) performing an analysis of the condition of individual Service Areas and their components. The most accurate way of determining the condition requires a walk-through to collect baseline data. The table below indicates which Service Areas have condition assessment programs in place.

Table 4-1 Status of Condition Assessment Programs

| Service Area      | Asset Class/Component | Condition assessment program in place? |
|-------------------|-----------------------|----------------------------------------|
| Road Right-of-Way | ALL                   | Yes                                    |
| Parks             | ALL                   | Yes                                    |
| Facilities        | ALL                   | Yes                                    |
| Fleet             | ALL                   | Yes                                    |
| Library           | ALL                   | No                                     |
| Fire              | ALL                   | Yes                                    |
| MIS Equipment     | ALL                   | No                                     |

## 5. Financial Plan

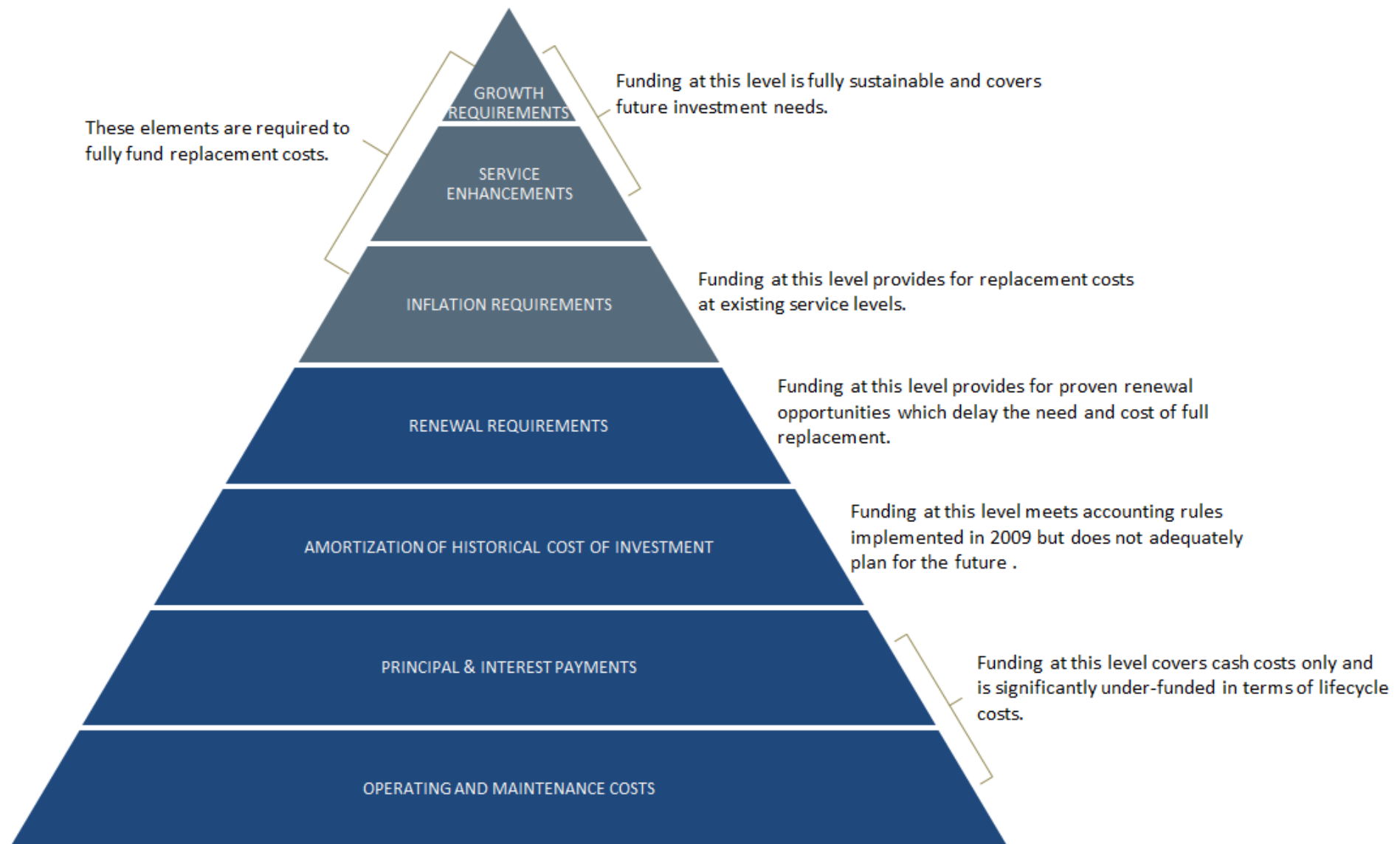
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### 5.1 General Overview of Financial Plan Requirements

In order for an MAMP to be effectively put into action, it must be integrated with financial planning and long-term budgeting. The development of a comprehensive financial plan is underway at the Town of Whitby and will be accompanied by an updated Development Charge Background Study and a Long Term Financial Strategy (2017). This will allow the Town of Whitby to identify the financial resources required for sustainable asset management based on existing asset inventories, desired levels of service, and projected growth requirements.

Figure 5-1 depicts the various cost elements and resulting funding levels that should be incorporated into AMPs that are based on best practices.

Figure 5-1 Cost Elements



## 5.2 Current Financial Profile

Table 5-1 below outlines the total capital financial needs for each of the Town of Whitby's Service Areas over the next 100 years. Table 5-2 and Table 5-3 compare the Town's current funding allocation with the respective Average Annual Capital Financial needs for the Service Areas.

Table 5-1 Total Capital Financial Needs

| Service Area      | 5 Year Requirement (Short-term) | 10 Year Requirement (Medium-term) | 25 Year Requirement (Medium-term) | 50 Year Requirement (Long-term) | 100 Year Requirement (Long-term) |
|-------------------|---------------------------------|-----------------------------------|-----------------------------------|---------------------------------|----------------------------------|
| Road Right of Way | \$65,718,232                    | \$157,609,427                     | \$363,640,994                     | \$874,320,393                   | \$2,474,546,464                  |
| Facilities        | \$17,581,832                    | \$80,750,534                      | \$330,722,850                     | \$474,894,750                   | \$874,772,543                    |
| Parks             | \$3,395,358                     | \$17,334,713                      | \$74,480,801                      | \$165,117,414                   | \$349,708,039                    |
| Fleet             | \$9,712,550                     | \$31,497,019                      | \$94,698,184                      | \$201,251,709                   | \$412,220,286                    |
| Library Resources | \$9,218,519                     | \$16,997,082                      | \$40,330,653                      | \$79,221,351                    | \$157,000,628                    |
| Fire              | \$1,096,102                     | \$2,898,070                       | \$7,187,598                       | \$15,349,421                    | \$30,685,841                     |
| MIS Equipment     | \$2,411,707                     | \$4,795,571                       | \$12,507,465                      | \$25,166,435                    | \$50,907,938                     |
| <b>Total</b>      | <b>\$109,134,300</b>            | <b>\$311,882,416</b>              | <b>\$923,568,546</b>              | <b>\$1,835,321,472</b>          | <b>\$4,349,841,738</b>           |

Table 5-2 Average Annual Capital Financial Needs

| Service Area                                    | 5 Year<br>Average<br>Annual<br>Requirement<br>(Short-term) | 10 Year<br>Average<br>Annual<br>Requirement<br>(Medium-term) | 25 Year<br>Average<br>Annual<br>Requirement<br>(Medium-Term) | 50 Year<br>Average<br>Annual<br>Requirement<br>(Long-term) | 100 Year<br>Average<br>Annual<br>Requirement<br>(Long-term) | Sustainable<br>Average<br>Annual<br>Requirement |
|-------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------|
| Road Right of Way                               | \$13,143,646                                               | \$15,760,943                                                 | \$14,545,640                                                 | \$17,486,408                                               | \$24,745,465                                                | \$23,841,317                                    |
| Facilities                                      | \$3,516,366                                                | \$8,075,053                                                  | \$13,228,914                                                 | \$9,497,895                                                | \$8,747,725                                                 | \$8,710,273                                     |
| Parks                                           | \$679,072                                                  | \$1,733,471                                                  | \$2,979,232                                                  | \$3,302,348                                                | \$3,497,080                                                 | \$3,577,816                                     |
| Fleet                                           | \$1,942,510                                                | \$3,149,702                                                  | \$3,787,927                                                  | \$4,025,034                                                | \$4,122,203                                                 | \$4,227,633                                     |
| Library Resources                               | \$1,843,704                                                | \$1,699,708                                                  | \$1,613,226                                                  | \$1,584,427                                                | \$1,570,006                                                 | \$1,555,592                                     |
| Fire                                            | \$219,220                                                  | \$289,807                                                    | \$287,504                                                    | \$306,988                                                  | \$306,858                                                   | \$305,047                                       |
| MIS Equipment                                   | \$482,341                                                  | \$479,557                                                    | \$500,299                                                    | \$503,329                                                  | \$509,079                                                   | \$511,307                                       |
| <b>Total Average<br/>Annual<br/>Requirement</b> | <b>\$21,826,860</b>                                        | <b>\$31,188,242</b>                                          | <b>\$36,942,742</b>                                          | <b>\$36,706,429</b>                                        | <b>\$43,498,417</b>                                         | <b>\$42,728,985</b>                             |

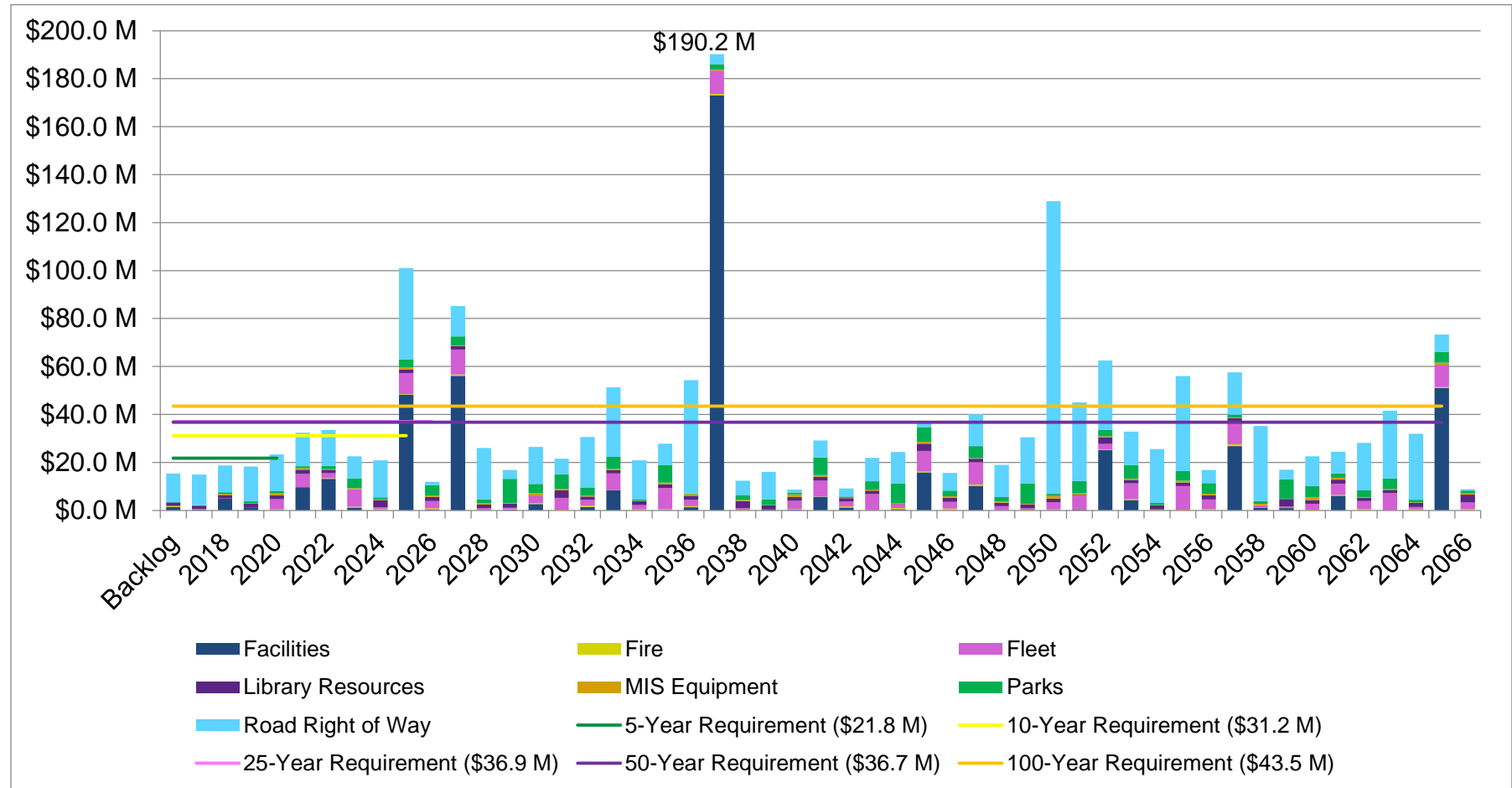
Table 5-3 Available Funding by Service Area

| <b>Funding:</b>                                                     | <b>5-Year<br/>Funding</b> | <b>10-Year<br/>Funding</b> | <b>25-Year<br/>Funding</b> | <b>50-Year<br/>Funding</b> | <b>100-Year<br/>Funding</b> | <b>Sustainable<br/>Funding</b> |
|---------------------------------------------------------------------|---------------------------|----------------------------|----------------------------|----------------------------|-----------------------------|--------------------------------|
| Road Right of Way                                                   | \$9,985,424               | \$9,985,424                | \$9,985,424                | \$9,985,424                | \$9,985,424                 | \$9,985,424                    |
| Facilities                                                          | \$4,727,718               | \$4,727,718                | \$4,727,718                | \$4,727,718                | \$4,727,718                 | \$4,727,718                    |
| Parks                                                               | \$1,677,309               | \$1,677,309                | \$1,677,309                | \$1,677,309                | \$1,677,309                 | \$1,677,309                    |
| Fleet                                                               | \$2,065,060               | \$2,065,060                | \$2,065,060                | \$2,065,060                | \$2,065,060                 | \$2,065,060                    |
| Library Resources                                                   | \$975,179                 | \$975,179                  | \$975,179                  | \$975,179                  | \$975,179                   | \$975,179                      |
| Fire                                                                | \$151,217                 | \$151,217                  | \$151,217                  | \$151,217                  | \$151,217                   | \$151,217                      |
| MIS Equipment                                                       | \$398,966                 | \$398,966                  | \$398,966                  | \$398,966                  | \$398,966                   | \$398,966                      |
| <b>Current Annual<br/>Budgetary<br/>Contribution</b>                | <b>\$19,980,873</b>       | <b>\$19,980,873</b>        | <b>\$19,980,873</b>        | <b>\$19,980,873</b>        | <b>\$19,980,873</b>         | <b>\$19,980,873</b>            |
| <b>Growth Reserve<br/>Funding</b>                                   | <b>\$2,936,440</b>        | <b>\$2,936,440</b>         | <b>\$2,936,440</b>         | <b>\$2,936,440</b>         | <b>\$2,936,440</b>          | <b>\$2,936,440</b>             |
| <b>Total Funding<br/>Available</b>                                  | <b>\$22,917,313</b>       | <b>\$22,917,313</b>        | <b>\$22,917,313</b>        | <b>\$22,917,313</b>        | <b>\$22,917,313</b>         | <b>\$22,917,313</b>            |
| <b>Total Average<br/>Annual<br/>Requirement (See<br/>Table 5-2)</b> | <b>\$21,826,860</b>       | <b>\$31,188,242</b>        | <b>\$36,942,742</b>        | <b>\$36,706,429</b>        | <b>\$43,498,417</b>         | <b>\$42,728,985</b>            |
| <b>Deficit/Surplus</b>                                              | <b>\$1,090,453</b>        | <b>-\$8,270,929</b>        | <b>-\$14,025,429</b>       | <b>-\$13,789,116</b>       | <b>-\$20,581,104</b>        | <b>-\$19,811,672</b>           |

## 5.3 Forecasting Annual Capital Expenditures

Figure 5-2 illustrates the forecasted annual capital expenditures for each Service Area and the average annual capital financial needs in the short, medium and long term financial planning horizons:

Figure 5-2 Forecasting Annual Replacement Needs by Service Area

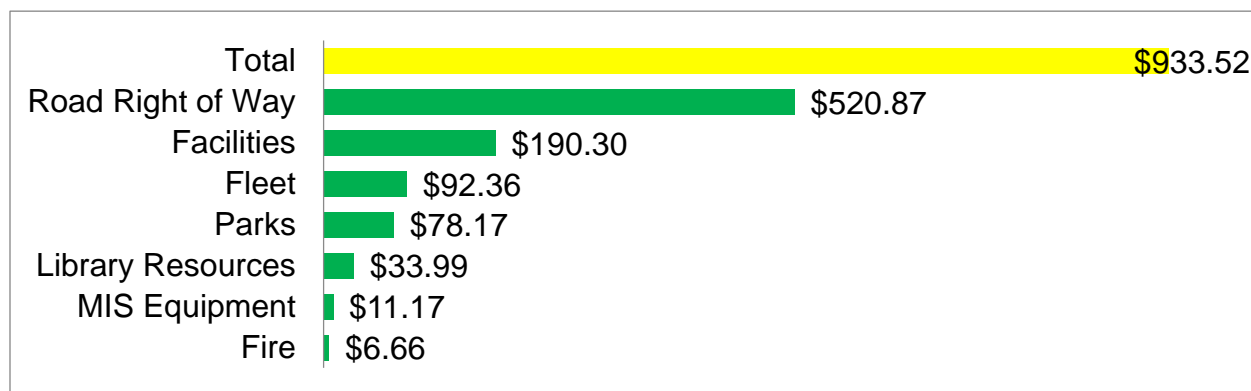


## 5.4 Financial Capacity Grade

The MAMP has identified the funding needs for the short-, medium- and long term planning horizons – ranging from 5 to 100 years. The average annual investment requirement in total for all seven Service Areas over a 50 year planning horizon is \$36,706,429. The average annual revenue currently allocated to these assets for capital purposes is \$22,917,313 leaving an annual funding deficit/gap of \$13,789,116. As such, collectively the seven Service Areas are currently funded at 62% of this long-term financial planning horizon.

Figure 5-3 illustrates the 50 year average annual capital requirement by household (based on 45,772 households).

Figure 5-3 50 Year Average Financial Needs - Per Household



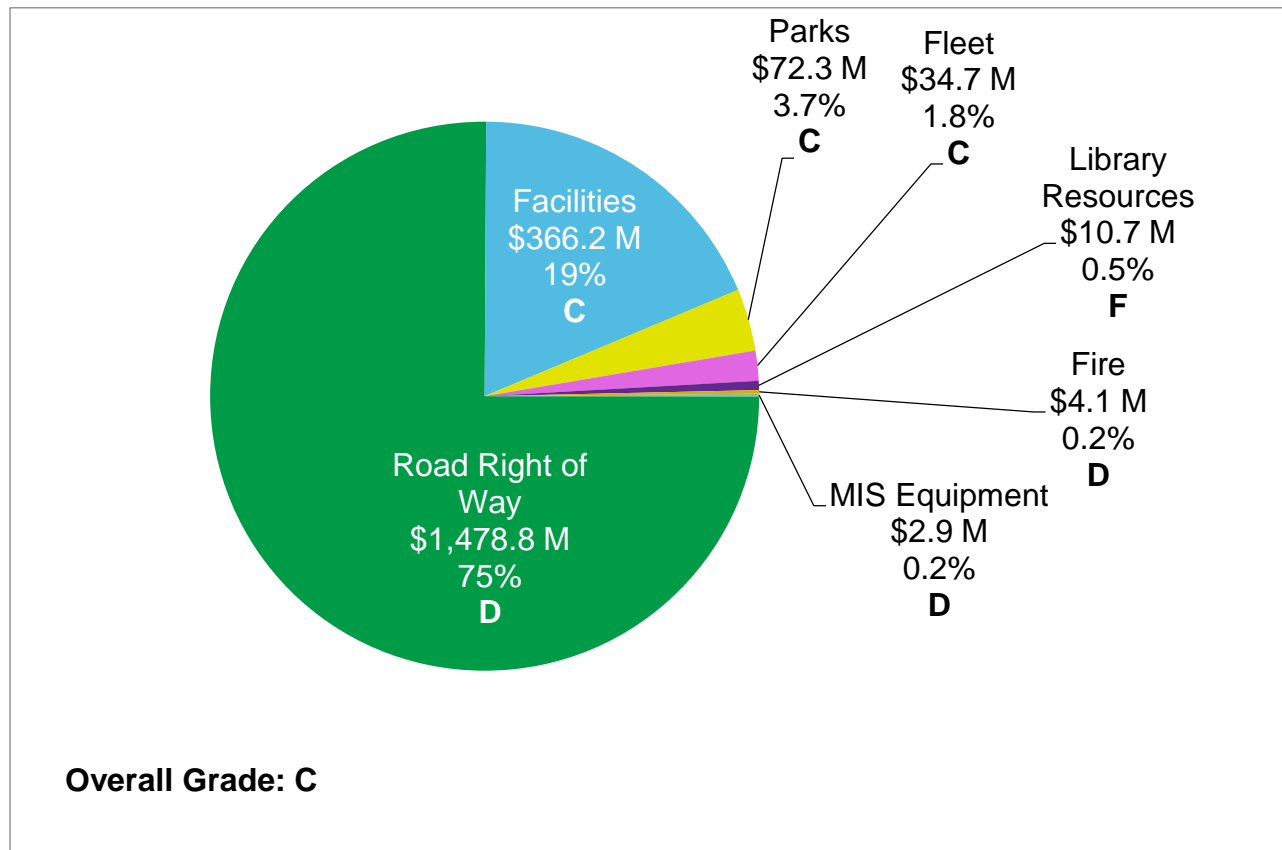
At this level of funding, the municipality is prepared to meet its short-term infrastructure needs, but is deficient in meeting its medium-term and long-term infrastructure requirements. As a result, replacement for assets in the medium-term will likely be deferred to future years. The municipality may also need to divest some of its assets and review levels of service currently provided

The asset management plan is a complex document, but one with direct implications on the public, a group with varying degrees of technical knowledge. To facilitate communications, a Financial Capacity Grade has been developed which provide grades for each infrastructure class based on its financial capacity as shown in Table 5-4.

While the annual funding deficit/gap is less significant in the short-term, a financial sustainability grade of “C” has been given to the municipality due to the medium and long-term financial gaps. This is an improvement over our grade of ‘D’ in 2016. In Figure 5-4 the Financial Capacity Grade for each service area is shown.



Figure 5-4 Infrastructure Report Card – Financial Sustainability



## 5.5 Financial Strategy

In 2017, the Town will be undertaking a Long Term Financing Strategy and will utilize the financial needs identified within the MAMP report to develop an appropriate strategy. In addition, the Town will be identifying anticipated future capital growth infrastructure needs via a Development Charge background Study (2017).

Table 5-4 Financial Capacity Grading Scale

How well is the municipality funding its long-term infrastructure requirements?

Short Term → Less than 5 years

Medium Term → 5 to 20 years

Long Term → Greater than 20 years

| Letter Grade | Rating    | Short-Term Needs Met | Medium-Term Needs Met | Long-Term Needs Met | Description                                                                                                                                                                                                                                                                                                                                                     |
|--------------|-----------|----------------------|-----------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A            | Very Good | Yes                  | Yes                   | Yes                 | The municipality is fully prepared for its short-, medium- and long-term replacement needs based on existing infrastructure portfolio.                                                                                                                                                                                                                          |
| B            | Good      | Yes                  | Yes                   | No                  | The municipality is well prepared to fund its short-term and medium-term replacement needs but requires additional funding strategies in the long-term to begin to increase its reserves.                                                                                                                                                                       |
| C            | Fair      | Yes                  | No                    | No                  | The municipality is underpreparing to fund its medium- to long-term infrastructure needs. The replacement of assets in the medium-term will likely be deferred to future years.                                                                                                                                                                                 |
| D            | Poor      | Partly               | No                    | No                  | The municipality is not well prepared to fund its replacement needs in the short-, medium- or long-term. Asset replacements will be deferred and levels of service may be reduced.                                                                                                                                                                              |
| F            | Very Poor | No                   | No                    | No                  | The municipality is significantly underfunding its short-term, medium-term, and long-term infrastructure requirements based on existing funds allocation. Asset replacements will be deferred indefinitely. The municipality may have to divest some of its assets (e.g., bridge closures, arena closures) and levels of service will be reduced significantly. |

## 6. Recommendations

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This is the Town of Whitby's second comprehensive Municipal Asset Management Plan (MAMP) for its seven Service Areas. The MAMP is a living document and will continually be updated and built upon. This version is considered Phase I. To ensure that future phases are meaningful documents that support the Town's ability to continue to build a strong asset management program, the following items are recommended:

8. To continue to develop robust condition assessment programs for all asset categories on a pre-determined schedule to keep data current and accurate.
9. To continually research new technologies/available preventative maintenance and rehabilitation strategies to minimize life cycle costs.
10. To review the high priority projects identified within the MAMP and incorporate them into the Capital Budget/Forecast on an annual basis.
11. To review corporate asset management software needs and implement a solution to provide corporate efficiencies.
12. To update the MAMP and report to Council on an annual basis.

In addition, future phases of the MAMP should include:

### Phase II (2018)

13. To undertake the development of a long-term financial strategy, and incorporate the findings into the MAMP.
14. To undertake asset growth projections via the Development Charges Study Update, and incorporate the findings into the MAMP.

### Phase III (2019-2020)

15. To incorporate all associated operating costs and activities and incorporate the finding into the MAMP