Toronto and Region Conservation Authority

2019

ASSET MANAGEMENT STRATEGY

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Toronto and Region Conservation Authority

12/9/2019

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Executive Summary

Toronto and Region Conservation Authority (TRCA) is a watershed management organization and has established an impressive network of greenspace and created a legacy of buildings and infrastructure that supports our recreational, cultural and educational programming and watershed management activities. TRCA's tangible asset portfolio includes erosion protection works and flood control infrastructure; trails and park amenities; recreational and educational centres; staff administration offices; as well as tenanted homes and historic buildings, these assets protect life, property and public infrastructure, and contribute to quality of life in the Toronto region.

TRCA is undertaking an Asset Management Program to effectively and efficiently manage our assets, while providing satisfactory levels of service to the general public, as well as our municipal and provincial partners, and ensuring the sustainability of our land and infrastructure to meet the demands of the future. TRCA's Asset Management Strategy is aimed at supporting the delivery of TRCA's Asset Management Policy (2017), which in turn supports delivery of TRCA's corporate strategic goals and provides oversight for the asset lifecycle activities required to support these goals.

The Asset Management Policy defines expectations around the management of TRCA's physical assets, while the Strategy articulates TRCA's commitment to implementing the Policy. The Strategy should be viewed as a living document that will evolve in response to internal and external changes faced by TRCA.

The Strategy describes the principal approach and methods to be employed by TRCA to facilitate the effective and efficient management of our assets and defines lifecycle activities to be used to manage the risk to service delivery associated with asset creation, commissioning, operation, maintenance, and disposal.

The Asset Management Strategy includes:

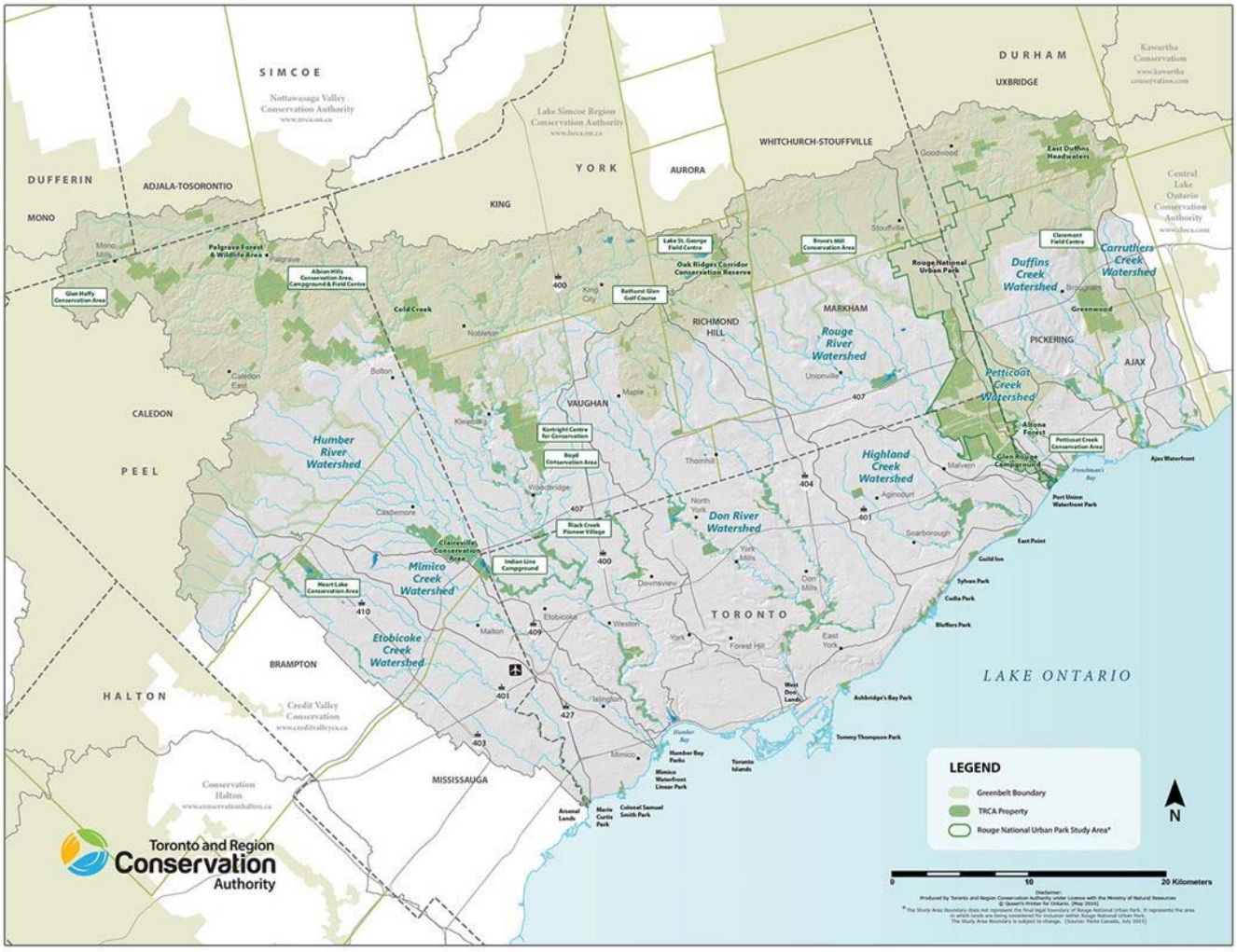
- A set of actions aimed at improving and sustaining asset management practices consistently across the organization.
- Clearly defined levels of service and applied asset management practices to provide those levels of service and ensure services are provided in the most efficient and effective manner.
- Procedures to manage the asset risk associated with attaining the agreed levels of service by prioritizing resources and expenditures based upon risk assessments and the corresponding cost/benefit recognizing that public safety is the priority.
- Practices, interventions, and operations that aim at reducing the life cycle cost of asset ownership, while satisfying agreed levels of service.
- Decision-making tools that balance service levels, risks and costs.
- Provisions that enable assets to meet future challenges, including changing demographics and populations, program area expectations, legislative requirements, technological, and environmental factors.

1 Introduction

1.1 The Need for an Asset Management Planning

TRCA's Strategic Plan, Building The Living City, lays out the strategic directions TRCA will take to meet our commitment to safeguarding and enhancing the health and well-being of the residents of the Toronto region through wise land use and the responsible management of natural resources; protection of life and property from natural hazards such as flooding and erosion; collaboration with our partners and the community; empowerment of local initiatives; the importance of life-long learning; a watershed-based approach to conservation.

TRCA's Asset Management Strategy will support the implementation of our Strategic Plan by establishing a long-term optimized approach to the management of our assets and furthering the development of asset management practices. This will help realize our commitment to continue working with our partners, and assisting them to protect their investment in public infrastructure and in the community to restore the integrity and health of the region's rivers and watersheds and to establish a regional system of natural areas that preserves habitat, improves air and water quality, and provides opportunities for the enjoyment of nature and outdoor recreation.



Map1 – TRCA map

TRCA is a watershed management organization with responsibility for managing over $461 million (2017) worth of tangible capital assets across various service areas throughout the TRCA jurisdiction. These assets directly and indirectly support delivery of 33 programs across all 9 service areas. The majority of TRCA's tangible capital assets are long-lived, requiring significant ongoing investment in operation, maintenance and renewal activities to ensure they are safe, structurally sound and fit-for-purpose to support our programs, the services they provide and the delivery of our Strategic Plan. To fulfill its obligations, TRCA must ensure that the assets integral to these programs are managed in a way that balances service levels, risk, and affordability.

TRCA's assets are halfway through their useful life. Many of TRCA's buildings, amenities and supporting infrastructure are in need of major refurbishment or replacement in order for them to continue to remain serviceable to the communities we support.

Asset Classes	Book Value (2017)	Net Book Value (2017)
Conservation Areas	$ 38,293,981	$ 21,277,792
Infrastructure	$ 168,340,707	$ 57,108,166
Education Field Centre	$ 4,349,270	$3,191,712
Administration Buildings	$ 11,874,970	$ 8,428,359
Property Management	$ 17,895,233	$ 4,624,779
Vehicles and Equipment	$ 12,452,940	$ 6,567,438
SUB TOTAL	**$253,207,101**	**$101,198,246**
Green Space and Lands	$ 346,128,752	$ 346,128,752
Work in Progress	$ 14,541,180	$ 14,541,180
TOTAL	**$613,877,033**	**$ 461,868,179**

Table 1 – TRCA Asset Value

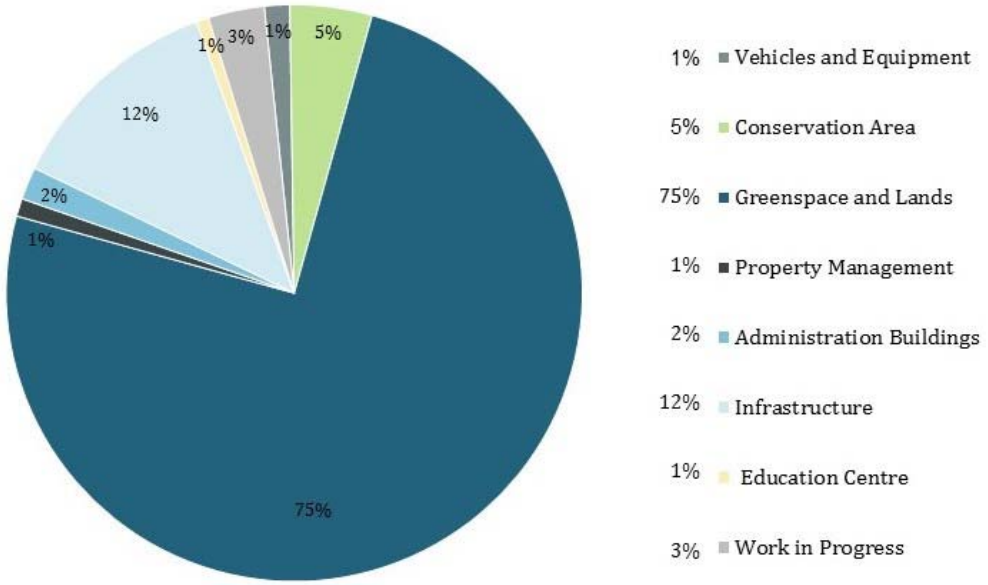


Figure 1 – The Value (2017) of TRCA's assets

1.2 Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure

Asset management planning is essential for the future resilience of Ontario communities, as municipalities require effective and robust plans to take care of their infrastructure over the long term. *The Infrastructure for Jobs and Prosperity Act, 2015*, was proclaimed on May 1, 2016 and includes an authority for the province to regulate municipal asset management planning. Municipal asset management planning regulation O. Reg. 588/17 under the Infrastructure for Jobs and Prosperity Act, 2015 came into effect on Jan 01, 2018. Building on Ontario's 2012 Building Together: Guide for Municipal Asset Management Plans, the regulation sets out new requirements for undertaking asset management planning.
The goal of the regulation is to promote continuous improvement in infrastructure asset management planning by requiring Ontario municipalities to develop a Strategic Asset Management Policy aligned with their strategic goals, official plan, master plans, financial planning framework, and the levels of service they intend to provide to their residents.

TRCA owns and manages assets critical to the protection of life and property and that contribute to quality of life in the Toronto region. Although asset management planning is not a legislated requirement for conservation authorities, member municipalities are encouraging TRCA to undertake comprehensive asset management planning to support requests for municipal capital funding.

1.3 Comprehensive Asset Management

TRCA will take a comprehensive approach to Asset Management that looks at the big picture and considers the combined impact of managing all aspects of the asset lifecycle including direct and indirect impacts. It will rely on collaboration between business units to plan, design, finance, maintain and operate existing and new assets to maximize benefits, reduce risk and provide safe and reliable levels of service to the programs we deliver. This will be accomplished in a socially, culturally, environmentally and economically conscious manner.

This comprehensive approach will rely on the following key organizational components integrated together to achieve the desired service outcomes:

- Well-planned strategies
- Robust physical assets
- Highly trained professionals with respect to practices and procedures
- Integrated business processes

These components, supported by appropriate technologies, provide a robust foundation for efficient service delivery.

1.4 Asset Management Framework

The TRCA Asset Management Framework as illustrated in Figure 2, represents how all the elements of an asset management system come together to support the line-of-sight between corporate goals and day-to-day decisions.
Asset management planning commences with defining stakeholder and legal requirements and needs, incorporating these needs into the organization's Strategic Plan, developing an Asset Management Policy, Strategy, Asset Management Plan and Operational and Maintenance Plans, linked to a long-term financial plan with a funding plan.

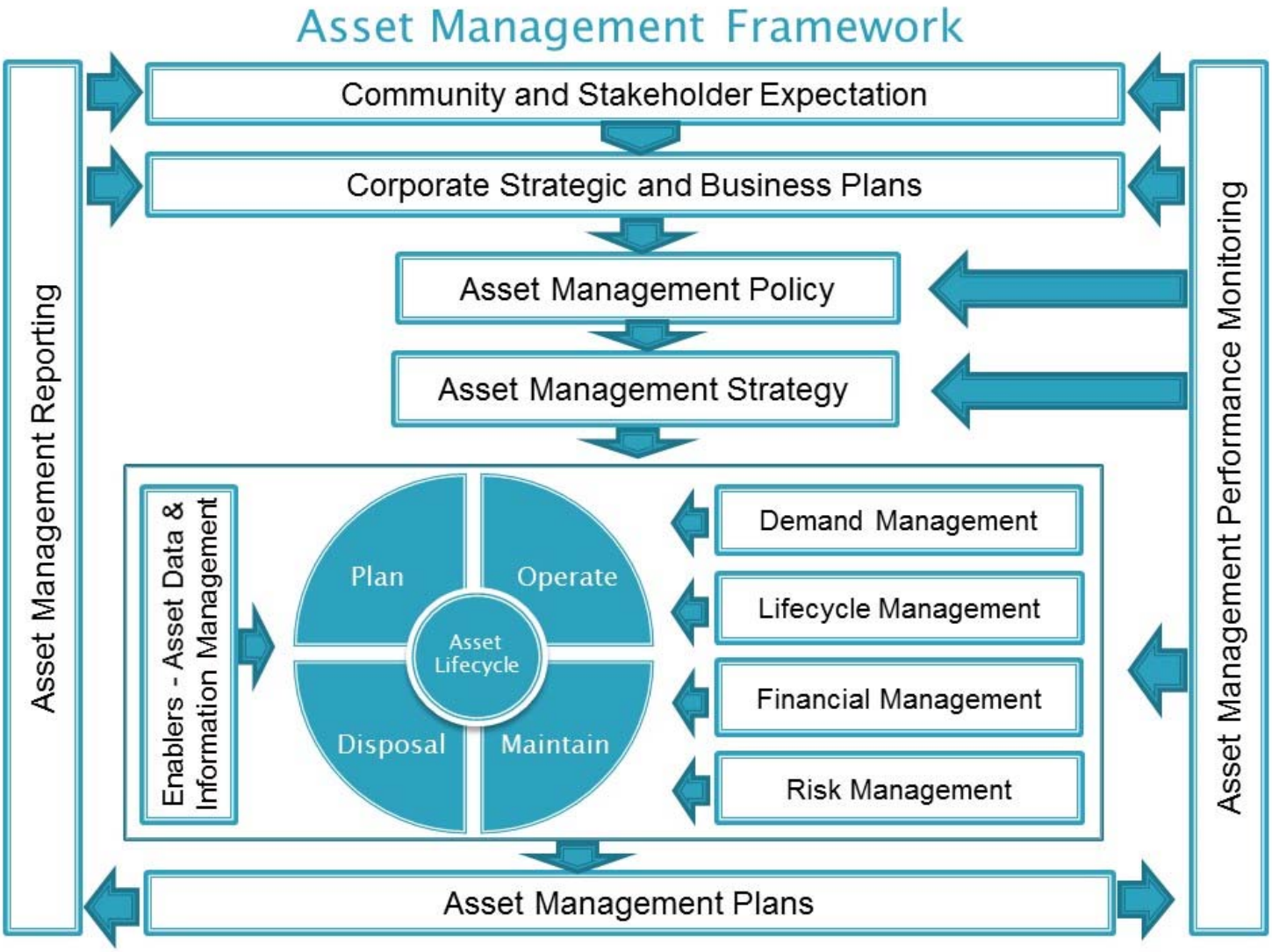


Figure 2 - Asset Management Framework

The TRCA Asset Management Framework will define the understanding of community and stakeholder expectations, and how these are embedded into longer-term corporate strategies and plans that guide decisions through the lifecycle of the assets. The Asset Management Policy articulates expected outcomes around how physical assets are to be managed and the Strategy defines senior management's commitment to achieving the policy objectives. Demand Management, Lifecycle Management, Financial Management and Risk Management work with Asset Management Enablers to provide guidance and consistency in documentation and implementation of asset management practices across services areas. Finally, the Asset Management Plans, that also includes the Operational and Maintenance Plans will apply asset management practices across service areas and facilitate reporting on State of Good Repair and outline a long-term financial funding plan.

2 Asset Management Governance Structure

2.1 TRCA Asset Management Governance Structure

The governance structure as outlined in Figure 3, is a foundational element that defines the organizational responsibilities required to deliver TRCA's Asset Management Program. It provides guidance on the development of asset management tools, processes, and it provides oversight on their application across the organization.

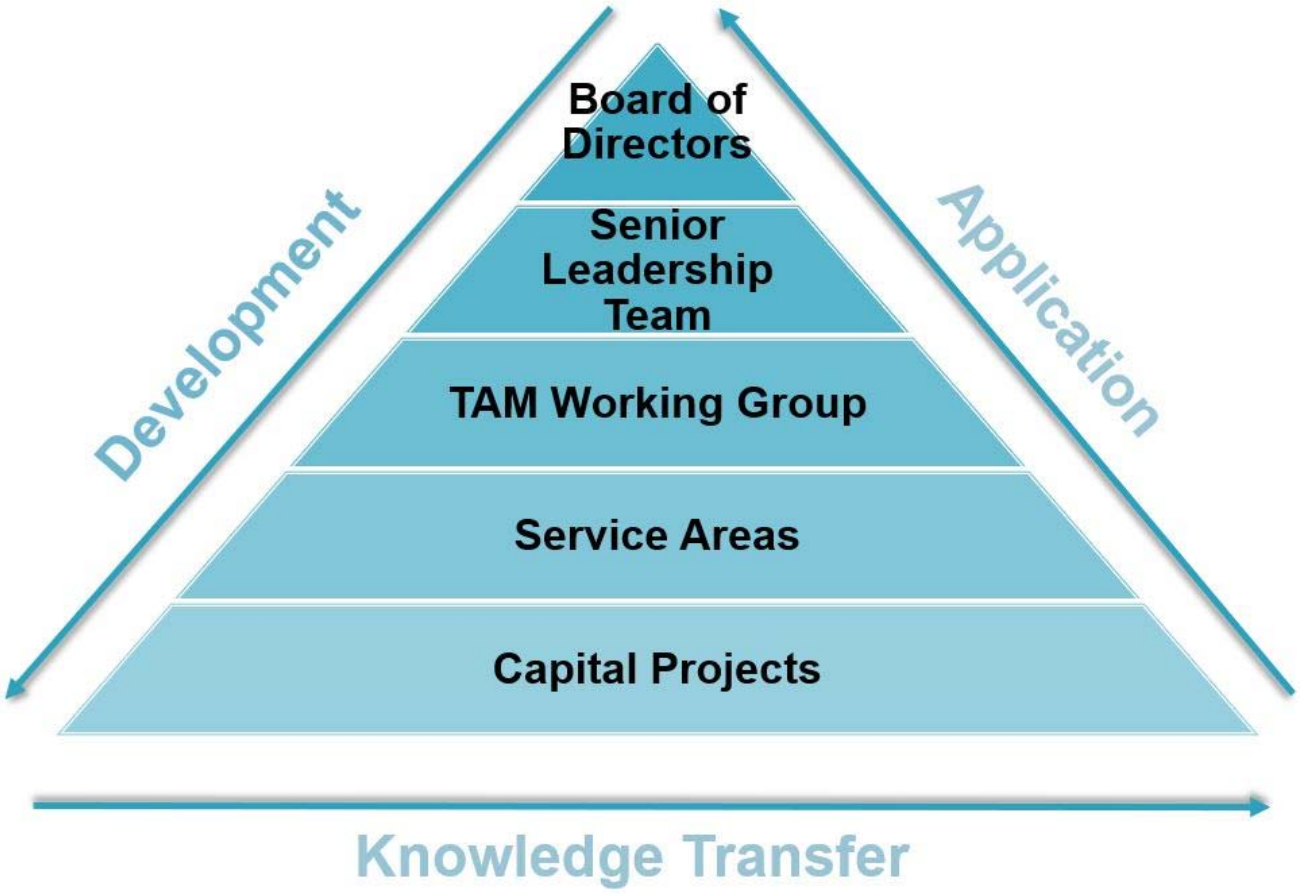


Figure 3 - Asset Management Governance Structure

Board of Directors

Subject to the Conservation Authorities Act and other applicable legislation, the Board of Directors is a governance body empowered without restriction to exercise all of the powers of TRCA under the Act. In addition to the powers of a conservation authority under s.21 of the Act for the purposes of accomplishing its objects, as referenced in Section 1 of the By-law, the powers of the Board of Directors, include but are not limited to, the following. The administrative/operational powers of TRCA, including but not limited to the approval of policies and procedures, are delegated to the Chief Executive Officer or designate.
Specifically, TRCA's Board of Directors has the following responsibility as it relates to the oversight of TRCA's Assets:

- Safeguarding and approving changes in assets.
- Approve details on budget allocations on any new or existing capital projects.
- Approve by weighted vote TRCA's operating and capital budget (which inherently provides approval of the projects/programs to be funded) for the ensuing year and approve the non-matching levy to be paid by the participating municipalities subject to applicable regulations.
- Approve any proposed acquisition, expropriation or disposition of land, and entering into contracts or agreements for the acquisition, expropriation or disposition of land subject to the requirements under the Act.
- Enter into management agreements with municipal partners for maintenance and development of TRCA-owned lands, and approval of development requests under such management agreements.
- Authorize the purchase of equipment or services necessary for carrying on the work of TRCA within the approved TRCA budget in accordance with the specific monetary limits set by the Board of Directors and in accordance with the policies and procedures established by the Board of Directors.
- Authorize the disposal of TRCA assets in accordance with the specific monetary limits set by the Board of Directors and in accordance with the policies and procedures established by the Board of Directors.
- Approval of TRCA organizational strategy documents including but not limited to: business plans; master plans; trail plans; asset management plans; asset management strategy and state of good repair reports for TRCA's jurisdiction.
- Approval of branding of assets, including potential advertising for external organizations on TRCA locations and assets.

Senior Leadership Team

The Senior Leadership Team approves the Asset Management Policy, and any subsequent updates; the Asset Management Strategy as prepared by the Tangible Asset Management Working Group; and Asset Management Plans and State of Good Repair Reports as prepared by responsible business units prior to being received by the Authority for approval or information.

Tangible Asset Management Working Group

TRCA's Tangible Asset Management (TAM) working group provides a forum across selected TRCA business units for providing direction of asset management strategy, integration, and best practices. This collaborative working group leads the development of corporate asset management tools and practices and promotes their application across the organization.

The TAM Committee supports TRCA's organizational priorities by:

- Setting priorities for the maintenance, replacement or retirement of the assets.
- Maintaining corporate policies pertaining to TRCA tangible assets.
- Directing the establishment of processes to effectively inventory and account for the performance and condition of TRCA tangible assets.
- Valuating organizational tangible asset requirements and directing the development, acquisition, and disposal of assets.

Service Areas

TRCA service areas, with responsibility for Asset Management, will implement the Asset Management Strategy and liaise with the Tangible Asset Management Working Group to facilitate integration and best practices, and priority setting. These groups will specifically prepare and implement Asset Management Plans, Operational and Maintenance Plans, as well as monitor and report on asset condition and performance through the preparation of State of Good Repair Reports. Provide adequate resources to support asset management goals at the service area level.

Capital Projects

- Embrace the new business processes and technology tools necessary to be effective at asset management.
- Adopt a team-based approach to service delivery and customer satisfaction
- Make best use of available data to track performance and drive decision making
- Seek to be innovative with respect to service delivery and adopt a culture of continuous improvement.

3 Comprehensive Asset Management Objectives

3.1 Asset Management Vision

TRCA is creating a cleaner, greener and healthier place to live for the current and future generations. We invest in the quality of life – socially, economically, culturally and environmentally. We aim to improve the health of the natural environment and create opportunities for a sustainable future.

Asset Management will allow TRCA to efficiently and effectively manage our assets while providing satisfactory levels of service to the general public, as well as our municipal and provincial partners, and ensuring the sustainability of our land and infrastructure to meet the demands of the future.

3.2 Asset Management Objectives

- Develop corporate policies and procedures pertaining to TRCA assets and asset management.
- Develop processes to effectively inventory and account for the performance and condition of TRCA assets.
- Valuate organizational asset requirements and direct the development, acquisition, and disposal of assets. To reduce lifecycle costs of the organization's assets.
- Set priorities for the management and maintenance of TRCA assets including providing corporate-level guidance on management and master plans for TRCA-owned or TRCA-managed lands, buildings and support infrastructure.
- Set priorities for the maintenance, replacement or retirement of TRCA's assets. Our assets may be of variable condition; it is the service they support and the cost to operate and maintain that are of prime importance.
- Guide the planning, construction, maintenance, and operation of TRCA's assets to ensure that we can continue to provide the programs and services to our various partners and clients.
- Outline a work plan and resource requirements for creating, updating and reporting on asset management plans
- Identify the optimal set of investments, alternatives, and timing that will deliver the greatest value while respecting all constraints.
- Ensure Value-for-money service- by the assets that maintain the ability to support the delivery of services. It must comply with all legal obligations, and meet future challenges of demand, quality, efficiency, and environmental change
- Our asset management practices will have both an outward focus on community benefit and an inward focus on efficiency and affordability.

3.3 Aligning Asset Management with Corporate Objectives

How the TRCA's assets are managed and operated plays a key role in achieving the TRCA's strategic goals and objectives. Many of these goals and objectives are reliant on the long-term sustainability of the assets and infrastructure; therefore, one of the aims is to put in place a clear line of sight between those high-level objectives and the day-to-day activities carried out on the assets, as shown in Figure 4.

Figure 4 - Asset Management – Line of Sight

TRCA's Asset Management will align with TRCA's Strategic Plan. As such it will take into consideration:

3.3.1 Green the Toronto region's economy

Improved sustainability performance by developing green economy innovation cluster in the Toronto region. Collaborate with the province, economic development organizations and businesses to promote the Toronto region as a global green economy leader to attract green economic investment and create green jobs. Reducing the funding gap between what is budgeted and what is required for the operation/ maintenance/ renewal of current infrastructure, and Balancing investment in new infrastructure compared with maintenance/renewal of existing infrastructure.

3.3.2 Manage our regional water resources for current and future generation (Adapting to Climate Change).

Increase resiliency of Regional programs and infrastructure by:

- Monitoring our watershed Network for a deeper understanding of the effects of urbanization on water resources and to determine how to improve the design of future developments and the retrofit of infrastructure.
- Implementing a coordinated plan that identifies and prioritizes activities that provide the greatest benefit to the rivers, waterfront and community health.
- Assessing severe weather event risks to Regional infrastructure, facilities and assets and mitigating those risks where possible. Undertake a Flood Mitigation Study to identify opportunities to mitigate the risk of flooding resulting from weather event and Update Emergency Management protocols.
- Secure the funding and support urgently needed for the long-term operation and maintenance of our flood control dams and channels and to advance our program of remedial works to reduce flood risks to communities.

3.3.3 Rethink greenspace to maximize its value

- The region's natural heritage system is protected to support, maintain, and enhance existing biodiversity and ecological functions.
- Achieve the most appropriate use of TRCA's inventory of lands and facilities while respecting cultural heritage and environmental values.

  Invest in aging infrastructure across TRCA's Conservation Areas and public spaces in order to provide safe, accessible, and functional facilities to the public.
- Secure, restore, and where appropriate, provide more accessible greenspace as part of the technical review of proposed projects and plans.

3.3.4 Create complete communities that integrate nature and the built environment

- Optimal access to TRCA owned or managed greenspace.
- supported member municipalities in integrating greenspace and green infrastructure into new and existing communities through initiatives such as retrofitting existing stormwater management ponds, terrestrial natural heritage system design, urban forest management and facilitating low impact development.
- supported municipal partners in addressing provincial requirements for hazards, watershed planning, and natural heritage in land use decision-making through developing guidelines and policies to inform their decisions.

3.4 Aligning Asset Management with Municipal Objectives

Although asset management plans are not currently a legislated requirement for conservation authorities, member municipalities are encouraging TRCA to undertake comprehensive asset management planning to support requests for municipal capital funding. Asset management plans provide a systematic process that guides decision making related to the planning, acquisition, operation, maintenance, rehabilitation and disposal of assets. Undertaking these plans will allow TRCA to achieve desired levels of service and compliance with regulatory requirements in the most cost-effective manner, enable better integration with municipal funding partners' capital planning process and help to minimize unexpected requests for capital.

Region	Goals	Objectives
Durham	1.4 Organization Health and Service Excellence	1.4.1 Deliver Regional services in financially prudent and sustainable manner
Peel	1.2 Communities are integrated, safe and complete	1.2.3 Promote healthy and age friendly built environments
Peel Climate Change (PCC)	1 Proactive and Responsive and Leadership	1.1 Complete a vulnerability risk assessment of all infrastructure of the community and natural heritage
Toronto	1.6 Fiscal Sustainability	1.6.2 Improve service and financial planning
York	1.3 Sustainable Environment	1.3.4.1 Implementing Greening strategy programs which increase forest cover and urban canopy

Table 2– TRCA Asset Management Alignment with Municipal Objectives

3.5 Supporting TRCA goals through our AM program

TRCA Asset Management (AM) Program is designed to enable the management of our infrastructure assets in a way that connects our strategic objectives to day-today decisions related to when, why and how we invest in our infrastructure systems. There are four layers to our AM Program which enable this connection as shown in Figure 5:

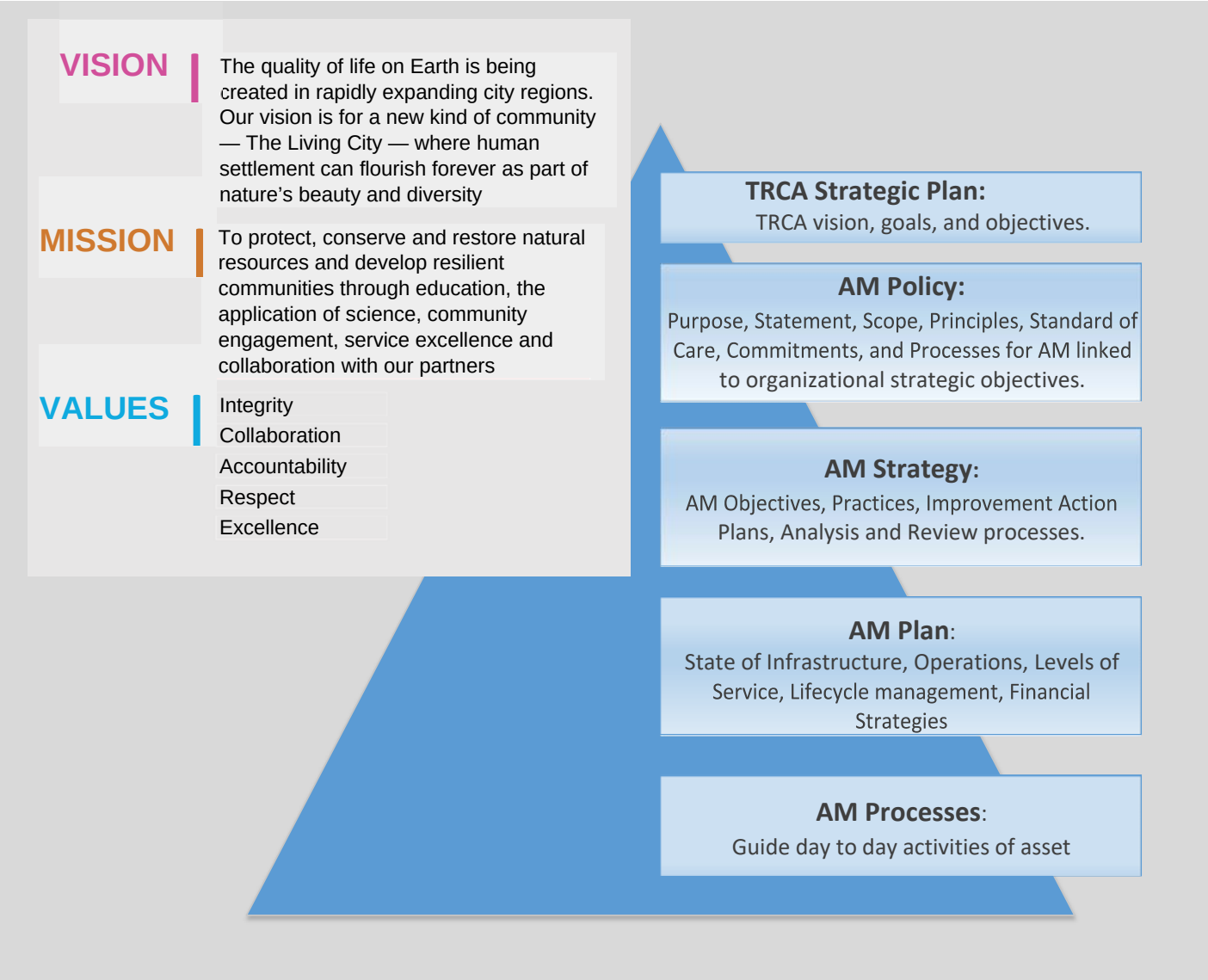


Figure 5 - Structure of the AM

1. TRCA Strategic Plan sets the direction for the future. TRCA's Vision, Mission, Values and Strategic Areas of Focus. The Vision, Mission and Values in the Strategic Plan are used to develop the CAM Policy.

2. The AM Policy describes the rationale to planning, designing, constructing, acquiring, operating, maintaining, renewing, replacing and disposing of the TRCA's assets in a way that ensures sound stewardship of public resources while delivering effective customer service. The Policy also identifies the roles and responsibilities of staff who make infrastructure-related decisions to provide a clear governance structure to ensure that other elements of the AM Program (AM Strategy, AM Plan, AM Processes) align with the AM Policy and Strategic Plan.

3. AM Strategy describes the approach to developing an Asset Management system that enables the line-of-sight from tactical decisions made in the AM Plan and AM Processes to the principles and commitments identified in the AM Policy. The AM system is an integrated set of processes that work together to create connections between service areas and is comprised of strategies related to: data management levels of service, risk management, asset lifecycle management, integration, communication and governance. These connections enable staff across the organization to make more holistic infrastructure related decisions that consider factors beyond their immediate function.

4. The AM Plan sets out how TRCA's infrastructure will be managed to achieve the commitments and principles outlined in the AM Policy. This is accomplished by:

- Understanding the current state of our infrastructure systems.
- Measuring and monitoring level of service (LOS) metrics that are established by staff to enable a quantitative connection between aspects of our infrastructure systems and the degree to which the systems are achieving the objectives laid out in the CAM Policy.
- Developing a relationship between the asset lifecycle management strategies executed by staff (i.e. how we operate, maintain, rehabilitate or replace assets) and the LOS metrics. This relationship will detail the method in which the lifecycle management strategies will impact the LOS metrics in the future and enable staff to determine the optimal lifecycle management strategies to achieve the desired LOS metrics.
- Establishing a financial strategy to fund the expenditures that are required to achieve the desired LOS metrics.

5. The AM Processes guide the day-to-day activities of staff who are responsible for managing our infrastructure systems. This step ensures that the AM Program is embedded and integrated throughout the organization, so it becomes part of every process undertaken by TRCA staff.

4 Asset Management Strategy

4.1 Purpose of The Asset Management Strategy

The Asset Management Strategy is the basis for delivery of the Asset Management Policy, efficient compliance with the business needs and achievement of corporate goals and the objectives of our partner municipalities. Also, the Asset Management Strategy sets a framework to guide the development, implementation, and maintenance of individual Asset Management Plans.

TRCA's Asset Management Strategy sets out the planned actions that will enable TRCA's assets to provide the desired levels of service in a sustainable way, while managing risk, at the lowest life-cycle cost. This Strategy sets out the state of current assets; a system for prioritization of asset renewal requirements based on condition assessment programs, and prioritizing maintenance and operations needs and investment based on analysis of known historical and forecasted future costs, and describes the current and future service levels the organization is planning to deliver and the current and future asset management capabilities that the organization needs to sustainably deliver these outcomes.

The strategy will address actions or policies that can lower costs or extend asset life. Also sets a baseline for potential future strategy changes and helps to inform or justify service level changes that may be needed to reflect changing demands.

Figure 6 below shows how the strategy and planning is a component of the whole AMP
.

Figure 6 - General AMS Model

4.2 Strategy Objective

The AM Strategy itemizes the following guiding principles, that can be further refined in the service-based asset management plans:

- Developing a **Systematic Approach** to achieve consistency in the application of asset management practices across the organization so everyone is aware of their role and is working towards a common purpose: the delivery of services;
- Establishing **Customer and Asset Levels of Service** so there are reasonable expectations between the service that can be provided, the level that can be afforded and the risk that can be tolerated;
- Using **Criticality and Risk Management** to identify the importance of different assets in supporting the delivery of services, thus providing the ability to take into account the likelihood of asset failure and the associated consequences in terms of impacts on customers and the TRCA's reputation;
- Applying **Asset Life Cycle Planning and Optimization**, notably to long lived assets having service lives lasting several decades, as operating and capital decisions need to be made looking at the lifecycle or whole life of the assets and not simply the initial cost of acquisition;
- Considering **Asset Resiliency** in how assets are planned and built providing an ability to adapt to changing demographics, changing climate, globalization, or evolving technology;
- Seeking **Service Delivery and Funding Opportunities** since how construction services are delivered, and the available funding sources have an impact on the quantity and quality of assets being built and acquired;
- Promoting **Resource Management and Development** as many staff have a role to play in the management of the TRCA's assets, be it through planning, finance, engineering, operations and maintenance. The ability to recruit, train and retain staff is an important factor in the asset management;
- Providing **Asset Reporting** so that asset condition information can be communicated in a meaningful manner reflecting the intended target audience in order to facilitate the ability to make sound investment decisions; and establish a process for reporting on State of Good Repair.
- Having complete and accurate **Asset Data** that provides the ability to support investment decisions and improve monitoring of performance against established levels of service;
- Leveraging and integrating **Technology** by enabling people to perform their tasks in an efficient manner;
- Fostering **Continual Improvement and Innovation** in the management of the assets to continue to support the delivery of services to customers; and
- Reporting on **Asset Management Performance Measurement** to confirm that the organization is delivering on its commitments.

Based on these principles, the AM program is working to implement a more rigorous process to increase the transparency and the consistency of decision making to maintain the assets that support the services delivered by the TRCA.

4.3 Corporate Asset Management Strategies

An effective asset management strategy requires knowledge of the condition of the assets, the performance of the assets as compared to desired levels of service and the associated costs to maintain, rehabilitate, replace, disposal and expand the asset systems and components. Asset condition and performance are identified through risk assessments. Required work can then be prioritized based on the relative risks of the assets. Consistent maintenance and renewal strategies are required and must be followed to minimize those risks.

The ability to deliver the levels of service are impacted by future population growth, which results in a need for additional infrastructure and addressing the aging infrastructure, which will increase future renewal, operation, and maintenance needs.

The objectives of the AM Policy require clearly defined strategies to ensure the alignment between the management of assets and the corporate objectives. Achieving consistency in the application of asset management practices across the organization requires a well-defined approach that structured and clearly communicated so each employee involved in the process is aware of their role and is working towards a common purpose. Corporate Asset Management strategies, as shown below, are being developed across TRCA service areas.

Figure 7 – Asset Management Strategies

4.3.1 Data & Information Management

Organizations rely on data and information as key enablers in undertaking activities for Strategy & Planning. Access to accurate asset data is the first step in successful strategic asset management practice, and capturing this information in an objective, repeatable manner is essential.
Asset information is a combination of data about physical assets that are used to inform decisions about how they are managed and enables better decisions to be made, such as those for asset maintenance or replacement. The decision may be based on information regarding the asset's location, condition, probability, and consequence of failure, work specifications and costs, constraints such as resource availability, and other business priorities, such as compliance with regulatory requirements.

The collection, management, and use of the information play a critical role in the implementation and sustainability of asset management. To be effective, data must be available and of suitable quality to support key business processes focused on the evaluation of risk, level of service, cost, and in making informed and defendable investment decisions. To support these objectives, a Data Management Strategy will be adopted.

Developing an asset data and information strategy that will assess the current position of business capability and clearly define how TRCA intends to acquire, store, utilize, assess, improve, archive, and delete assets information to support asset management activities. And take into account the life-cycle costs of the provision of asset information and the value the information adds to TRCA and ensure the consistency of this service.

Effective data management will ensure to assess the quality of the data and develop a data improvement plan to ensure that missing, or sub-standard data can be acquired within acceptable timescales. Continually reassess asset information, processes, and systems to maintain business alignment, effectiveness, and sustainability.

TRCA is now moving to implement a full-scale asset management tool that will capture the assets and components that must be managed for maintenance and replacement, as well the financial reporting to support the Asset Management Plan.

Developing an asset management database that ensures all asset data is captured efficiently and stored in a central repository to enable delivering maximum efficiency and effective outcomes even for assets with complex components and can easily integrate with other existing systems and has reporting capability across the entire platform.

Finally, provide a strong track record of enabling informed decision making and optimized capital expenditures in the long-term, and assist in forecasting future capital expenditures.

The database will provide the following,

- Decision makers will be able to rely on verified information as a base for their decisions.
- Provide readily available, reliable information for effective management of the assets.
- Users will have readily available, user-friendly access to information including the ability to identify trends.
- Provide clear procedures for data handling and fewer requests for information.

4.3.2 Levels of Service

Level of Service (LOS) is a key business driver and influences all asset management decisions. LOS statements describe the outputs intends to deliver the service attributes such as quality, capacity, reliability, sustainability, availability, safety, timeliness, accessibility, and cost.

One of the key goals of asset management is to provide the desired level of service in the most cost effective and efficient manner. A key objective of Asset Management is to optimize the balance between the competing objectives of Level of Service, risk and cost with the aim of meeting customer service levels at the lowest lifecycle costs. Level of Service (LOS) measures can be used to monitor the effectiveness of the asset management and maintenance regime and support the development of strategic plans for asset management.

Level of Service are linked at three levels within the TRCA:

- **Corporate LOS**: Sets the corporate objective
- **Customer LOS**: Defines the services that the Asset Manager provides to the customer
- **Asset (or Technical) LOS**: Defines the technical requirements needed to achieve service objectives. using metrics that describe what the organization provides.

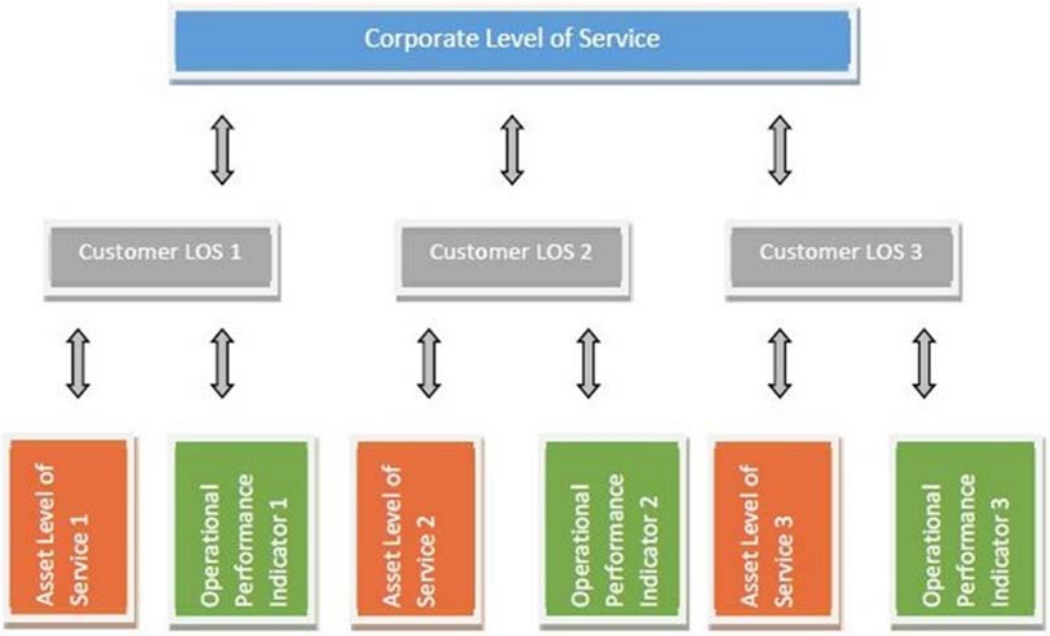


Figure 8 – Levels of Service

ISO 55000 best practices indicate that asset management objectives should be in the form of Level of Service (LOS) measures, which cascade vertically from Corporate measures to Technical measures. Figure 9 below shows how LOS measures can be aligned from the corporate performance vision, down to day-to-day asset management decision-making (at the Technical LOS level), ultimately enabling customers to assess the suitability, affordability, and equity of services offered.
It is important to define and quantify the Level of Service within each service area, as these become the driver for the identification of asset needs and the basis for investment decisions.

External trends and issues affecting desired LOS or the ability to meet the desired LOS will be reviewed on a regular basis to ensure any impacts to the LOS and to be addressed on a timely manner.

Figure 9 – Alignment of Levels of Service to Corporate Strategy

LOS are met through the following procedures and processes;

- Define levels of service through performance metrics, targets, and timeframes to achieve the targets.
- Prioritization of investment to address critical assets first, the priority rankings take several LOS factors into consideration including the asset condition assessment, age and legislated standards.
- Asset designed rehabilitation and replacement practices and emergency events that require immediate replacement of an asset.
- Code and bylaw changes to be reviewed as they occur and assess their impact on the assets.
- Periodic Life Cycle Costing Analysis (LCCA) review of all assets. This includes a review of the impact of the asset on operating expenses. Such a review may indicate that an asset should be replaced earlier to improve or maintain service levels and minimize costs.
- Ongoing service level reviews through performance measures, targets, and timeframes.
- Ongoing control and review of capital and operating spending.
- Efficient, uniform practices in dealing with different assets.
- Ongoing review of asset demand.

4.3.3 Risk Management

Inherent in delivering a wide range of services to the community, TRCA is exposed to a variety of internal and external factors that add uncertainty to the successful delivery of service. Uncertainties that have an effect on the organization's ability to achieve its objectives are termed "risks" and have the potential to significantly affect TRCA's ability to deliver services in an effective and efficient manner

All activities of an organization involve risk. The objective of risk management is to assess which risks pose unacceptable conditions to the organization and advance plans to address them. This is best accomplished through structured processes that manage risk by identifying it, analyzing each risk individually and then evaluating whether the risk should be modified by risk treatment in order to satisfy the risk criteria.

Utilizing a risk-based approach will allow TRCA to identify the importance of different assets (asset criticality) in support its operations, and the delivery of services. It also helps the organization make informed, defensible decisions regarding the allocation of resources with respect to managing of these assets. Managing assets using a risk-based approach will provide the following:

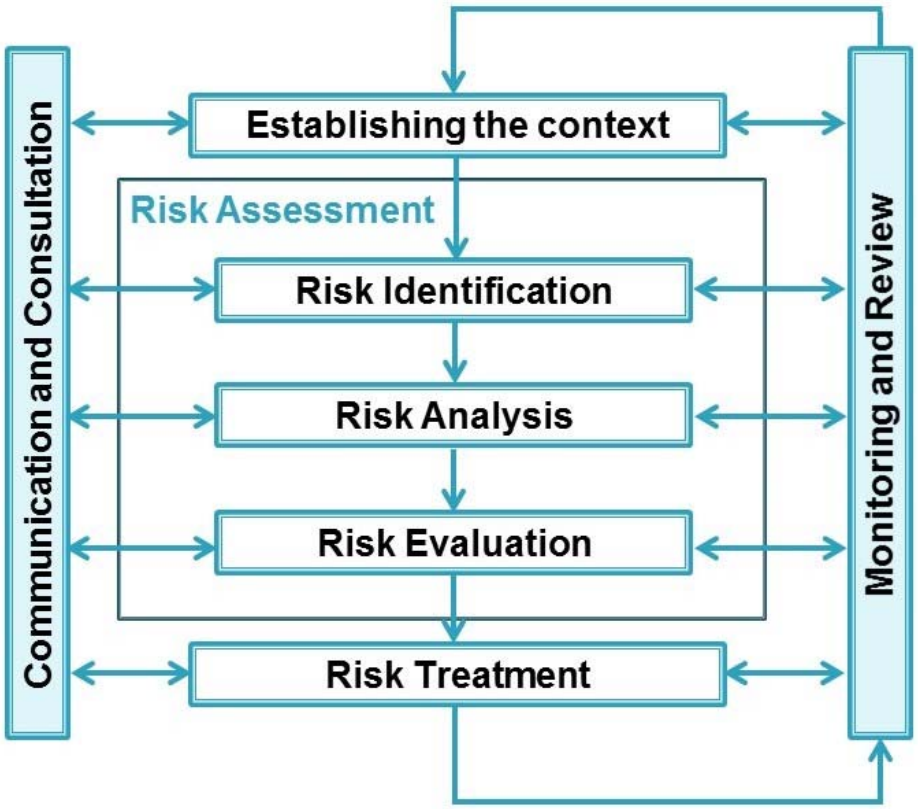
- Service areas will gain a greater understanding of, and a formal process to, address the risks to which their assets are exposed.
- Decision makers can be comfortable with knowledge of the risks associated with their choice.
- Operators will experience fewer surprises and be better prepared for expected asset failures.

Fundamental to managing assets using a risk-based approach will include the following components:

4.3.3.1 Risk Management Process

The risk management assists in managing risks effectively through the application of the risk management process at varying levels and within specific contexts of the organization. And ensures that information about risk derived from the risk management process is adequately reported and used as a basis for decision making and accountability at all relevant organizational levels.

Some of the key components of the risk management process as shown in Figure 10 are described further below: *Figure 10 - Risk Management Process*



Communication and consultation with external and internal stakeholders should take place during all stages of the risk management process.

Establishing the context will capture the objectives of the organization, the environment in which it pursues those objectives, stakeholders and the diversity of risk criteria which will help reveal and assess the nature and complexity of its risks.
By establishing the context, TRCA articulates its objectives, defines the external and internal Parameters that set the scope and risk criteria for the remaining process. Service areas will gain a greater understanding, and a formal process to address the risks to which their assets are exposed.

Risk assessment includes risk identification, risk analysis and risk evaluation.

Risk treatment involves selecting one or more options for modifying risks and implementing those options. Once implemented, treatments provide or modify the controls. It should be considered that risk treatment while aimed at managing an identified uncertainty can in their own right create new risks or modify existing risks Selecting the most appropriate risk treatment option involves balancing the costs and efforts of implementation against the benefits derived, with regard to legal, regulatory, and other requirements such as social responsibility and the protection of the natural environment.

Monitoring and review processes should encompass all aspects of the risk management process and involve regular checking, supervising, critically observing or determining the status in order to identify the change from the performance level required or expected.
A successful monitoring program may make use of dashboards that track key risk indicators, or leading indicators that may result in an event trigger. The goal of such a practice is to develop robust forecasts taking into consideration asset criticality and risk changes over time enabling the organization to determine how to adjust interventions and the level of capital and operational investments needed to sustain the assets over time.

4.3.3.2 Risk Assessment

There are two approaches to risk assessment: top down and bottom up as shown in figure 9. However, the best approach is to combine the two, in order to achieve effective integration of risk management at any level within the organization, also keeps everybody in organization involved in risk management process and ensures accountability and improves compliance to risk reduction processes.
In the process of risk assessment, the organization identifies, analyzes each risk individually and finally evaluates each risk in context to prioritize action.

Risk Identification is the process of identifying as many sources of risk, areas of impact, events their causes and their potential impacts as possible. The aim to identify risks that are under and outside of the organization's, control as well as internal and external to the organization across a number of categories including hazard, operational, financial and strategic risks.

Risk analysis involves consideration of the causes and sources of risk, their positive and negative consequences, and the likelihood that those consequences can occur. Combined they can provide a quantifiable measure of each risk faced by TRCA.

Risk evaluation involves comparing the level of risk found during the analysis process with risk criteria established when the context was considered, based on this comparison, the need for treatment can be considered.

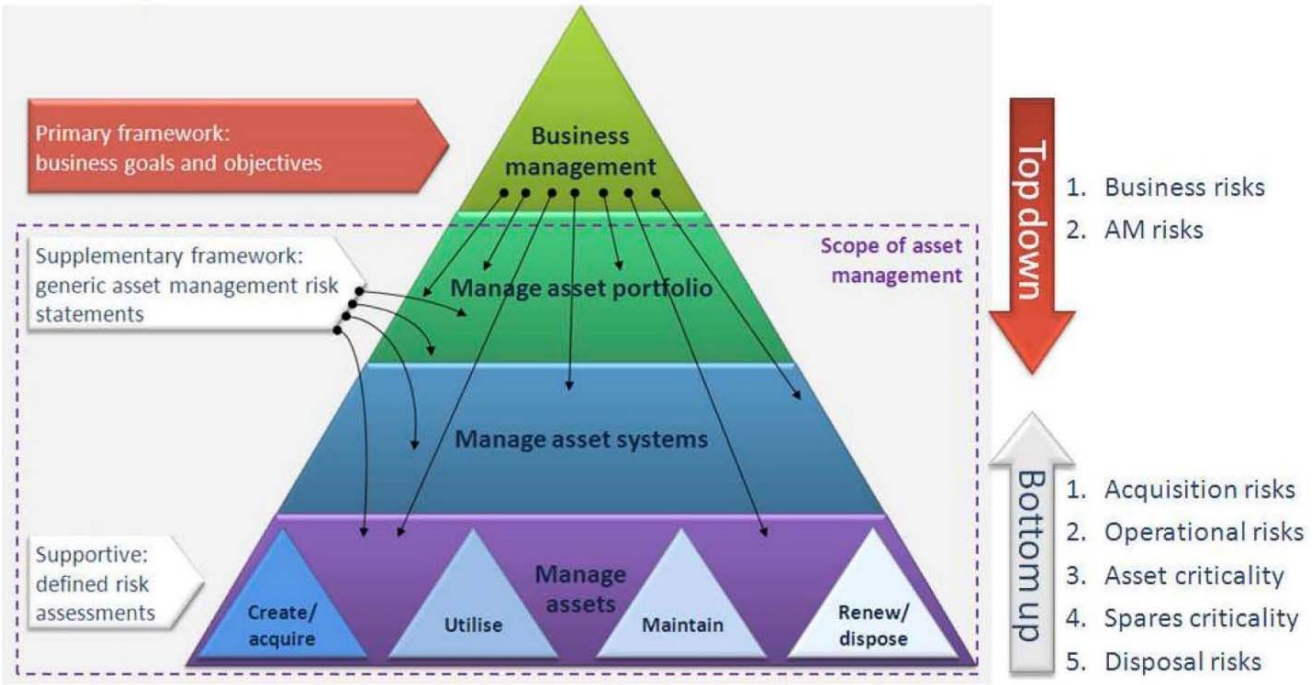


Figure 11 – Risk Assessment

4.3.3.3 Risk Assessment to Identify Potential Service Gaps

Risk can take many different forms, including public and employee safety, financial, environmental, and social. The asset risk assessment takes into account potential losses to services, financial loss, and potential safety hazards. All assets are scored according to the impact of asset failure against these criteria and the likelihood of that failure occurring based on asset age, condition and performance.

Consequences of an asset failure are determined based on the degree to which the failure of the asset would impact the following “triple bottom line” considerations:

- **Service delivery** considerations such as the lack of sufficient service capacity to meet demand or loss of existing service expressed as degree and duration of impact from minimal localized short-term disruption of nonessential service to widespread and long-term disruption of essential service.
- **Financial impact** considerations such as damages to property and infrastructure, loss of revenue, and fines.
- **Safety impact** considerations such as an ability to meet H&S related regulatory requirements and degree and extent of an injury, from negligible injuries and multiple loss of life. The higher the criticality an asset has, the lower the tolerance for risk is for that asset.

4.3.4 Asset Life Cycle Planning and Optimization

Most of the TRCA's physical assets are long-lived assets having service lives lasting several decades. As a result, infrastructure-related decisions have a lasting impact. These decisions need to be made looking at the lifecycle or whole life of the assets in conjunction with risk and Level of Service.
The whole life costs are to account for the complete lifecycle of the assets, including planning, designing, construction, acquisition, operation, maintenance, renewal, replacement, and disposal costs. The lifecycle strategy is central to the management of the assets. The lifecycle approach enables TRCA to optimize the value of the asset giving due regard to the whole life costs and the service it provides and also address actions that can lower costs or extend asset life.

Life Cycle Cost Analysis (LCCA): assesses the total cost of ownership for assets and help optimize capital planning by considering costs of acquisition, financing, operation, maintenance, replacement, and disposal. LCCA is defined as a method for evaluating all relevant costs over the performance life of a project, product or facility along with the environmental assessment of the asset. LCCA is used to minimize the costs by comparing each option to alternative choices that are similar. Future costs must be discounted, and inflation must be incorporated when reviewing all options.

Value Optimization (VO): considers the value of the asset system in addition to asset costs. It aims to deliver the best ratio of benefit (in terms of delivering the organization objectives) and life cycle cost. In other words, the best value for money.

LCC & VO can be applied at different levels for an asset as shown in figure 10.
LCC & VO Combine capital investment decision making with maintenance and operation decision making processes to support asset management decisions in relation to costs, risks and value opportunities considering both short-term impact and long-term consequences

The correct application of LCC & VO

- Increases financial and economic benefits
- Improves decision making effectiveness.
- Better communication with stakeholders, as well as driving cross-disciplinary governance and consistency.

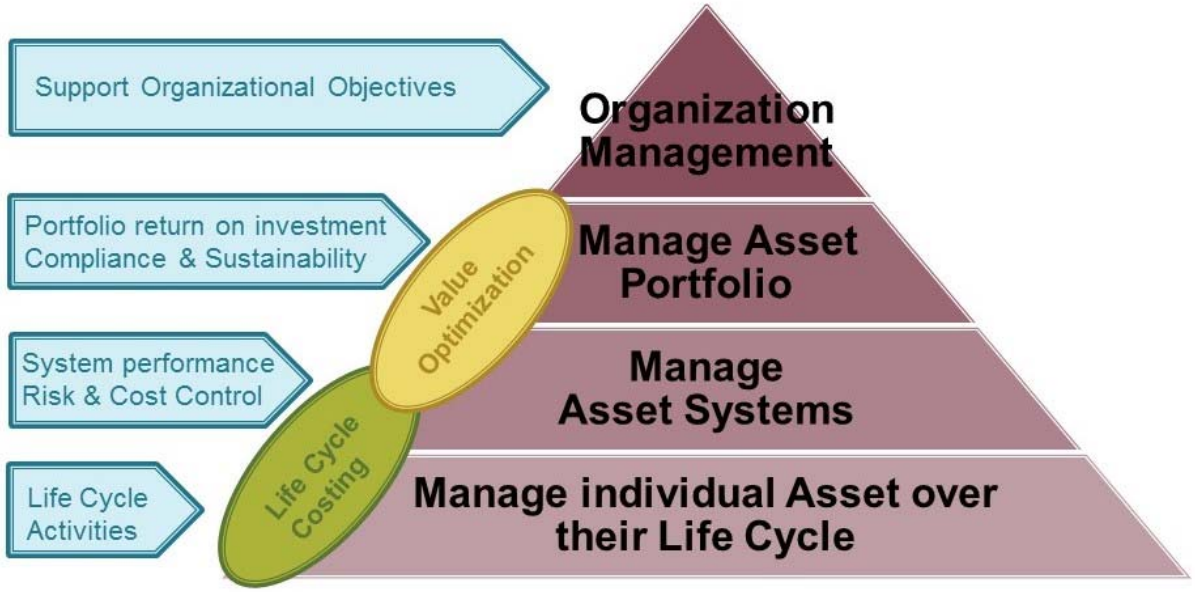


Figure 12 - Asset Life Cycle Planning and Optimization

Lifecycle management plans provide a comprehensive view of investment needed to:

- Ensure that analysis, design and asset planning exercises extend over the entire expected life of the asset.
- Sustain service through the operation, maintenance and renewal of existing infrastructure, and buildings.
- Ensure that all operational investments driven by capital programs or development approvals form an integral part the decision-making process and that both capital and operational aspects are adjusted when changes occur to either in order to maintain their balanced relationship.

- Enhanced business case process; the lifecycle costs as part of the preparation for the annual budget submission and assess investment decisions (new and renewal) based on lifecycle costing and not solely the initial capital cost.
- Enhance service to address growth and changing service requirements through the upgrading and expansion of existing infrastructure and buildings.

4.3.5 Asset Lifecycle Management Strategy

An asset lifecycle management strategy provides a comprehensive and effective approach to asset management. It manages and optimizes the cost and performance of an asset by considering the whole lifecycle. The asset lifecycle management strategy allows to focus on the entire lifecycle of the asset, and to make better-informed and optimized decisions that consider a wider spectrum of solutions.

ISO 55000 consists of requirements for planning and specifies information criteria across all asset management areas such as risks, roles, responsibilities, processes, activities and information exchange. The standard sets out that asset management objectives include planned actions to address and monitor asset effectiveness.

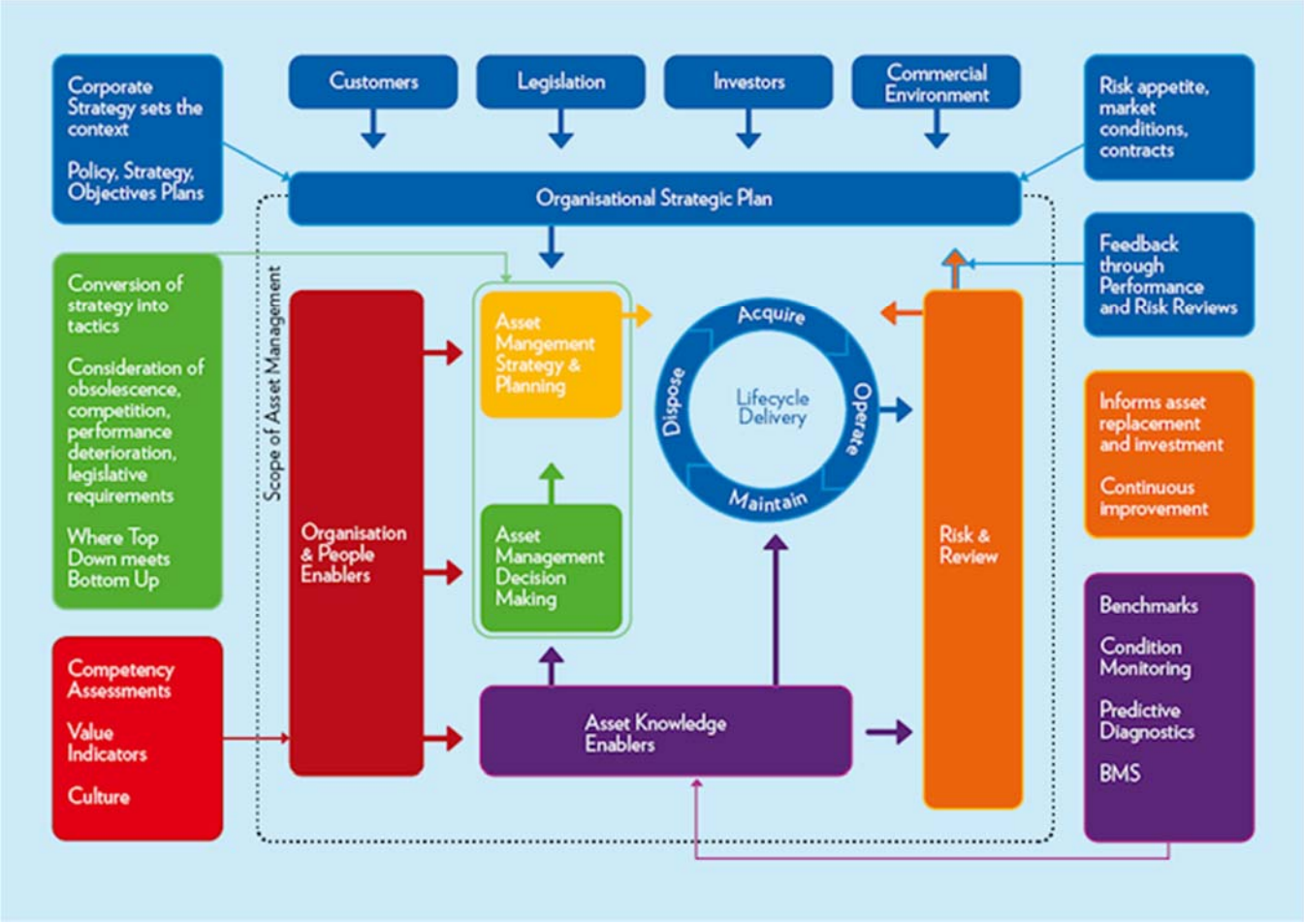


Figure 13 - Asset Life Cycle Approach

Key components of this strategy include:

4.3.5.1 Renewal, Rehabilitation, Replacement Activities

Asset lifecycle management strategies are typically organized into the following categories as shown in figure 14: *Figure 14 - Asset Life Cycle Delivery*

- **Non-Asset solutions** are developed through the master planning process through plans such as the Energy Conservation, Demand Management Plan, Feasibility Studies and using an integrated approach to the planning of infrastructure improvements to minimize cost and maximize service delivery.
- **Operations and maintenance** of the asset portfolio are based on both existing assets requirements and forecast growth by assessing consequential operational and maintenance requirements. Through Clearly defined preventative maintenance programs that include regularly scheduled inspections, repairs, and maintenance activities including those associated with unexpected events.
- **Renewal/rehabilitation activities** which are designed to extend the life of the asset, and are based on maintaining asset elements in a condition state of fair or better. Renewal activities are prioritized higher for critical elements (e.g., Life Safety and Legal Compliance, structural, fire protection, and weather related).
- **Replacement activities** are identified once an asset has reached the end of its useful life and renewal/rehabilitation is no longer an option.
- **Disposal activities** are associated with disposing of an asset once it has reached the end of its useful life or is otherwise no longer needed by the TRCA. The disposed asset is removed and logged out of the inventory of the Maintenance Plan. As well, the new item is added to the Maintenance Plan and into the Capital Plan with a new life cycle.
- **Expansion** of the asset portfolio is developed through the master planning process conducted by each service area. Expansion activities are to extend services to unserved areas or/and service level increases to existing assets to meet the growing demands.

As the master planning processes provide the focus for non-asset solutions and expansion of the asset portfolio, the Asset management plan will be focusing on the renewal and maintenance of the assets once in place. TRCA preserves assets through maintenance and renewal (i.e., rehabilitation and replacement) activities and investments. Maintenance and renewal activities are timed to reduce the risk of service failure from deterioration in asset condition, and to minimize the total cost of ownership.

4.3.5.1.1 Asset Operation Strategy

Asset Operation concerns the day-to-day operational activities necessary to support asset users, including maintenance, and the delivery of the activities identified through the asset management strategy. The relationship between asset management and asset operation is shown graphically in Figure 15.

Assets or asset systems exist to perform certain functions so as to deliver products or services to a required performance standard or level. Organizations develop Operations Strategy short term and long term, invest in assets and work towards successfully implementing the strategies to achieve the organizational objectives. Asset Operations is very important in contributing to meet the required service level and to achieve the organization's objectives. So, it is important that operators have precise guidelines how to operate the assets within the appropriate design, the maintenance and operational parameters. Asset operations deals mainly with the relationship asset — people — procedure.

As an example, Transportation infrastructure comprises a network of generally horizontal (linear) assets that may include road pavements, bridges and tunnels, each component having its own requirements for ongoing asset condition assessment, risk assessment, routine maintenance, preservation works, incident management and planned component replacement. In the building the operation of “vertical” assets is more commonly called Facilities Management, but typically need less proactive asset management tools as neither the exposure environment nor live loading levels are sufficient to justify this cost, coupled with less stringent Regulation and lower risk of failure.

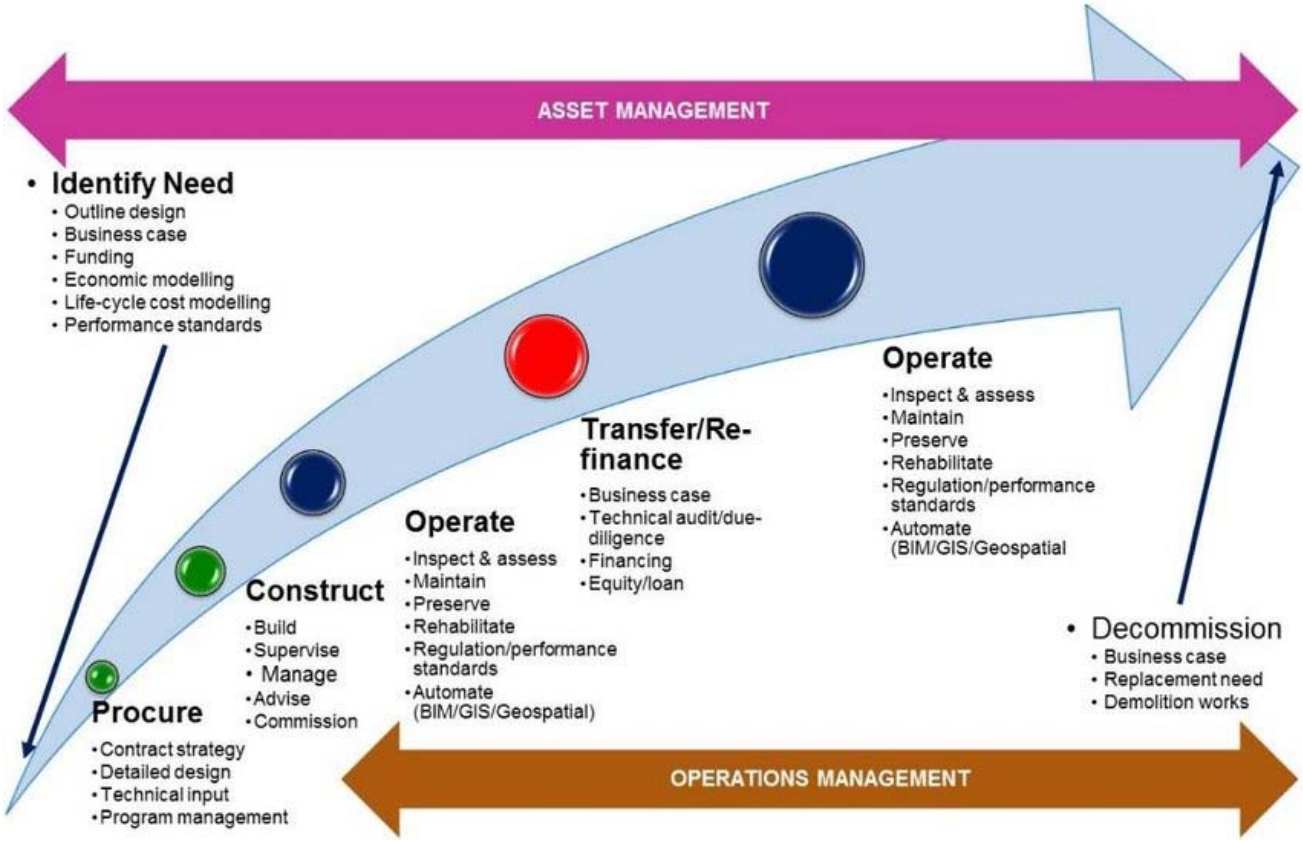


Figure 15 - Asset Management and Operation over the Service Life

4.3.5.1.2 Asset Renewal Strategy

All assets physically deteriorate at different rates to eventual failure and loss of ability to deliver the required LOS. Asset condition is a measured assessment of an asset's current position or place on the asset "decay" or deterioration curve. Many assets deteriorate slowly at first to a fair condition and, after that, there is more rapid degradation. This typical lifecycle pattern is illustrated in the figure below, which shows the relationship between condition and effective life (i.e., age).

A key observation is that it is far more cost effective to maintain and rehabilitate assets before they reach a condition where the only option is costly reconstruction. For assets where preventive maintenance and rehabilitation activities are technically feasible, understanding the asset's current condition and place on the asset decay curve enables forecasts of future condition and determination of optimal treatment type and timing – key aspects of lowest lifecycle cost renewal decision-making.

Because major asset renewals and replacements can be costly, they must be phased over time and across the entire asset portfolio. As TRCA refines asset management planning through optimization analysis, it will have a better ability to track asset condition, compare this to targets, and use the information to make more effective decisions about renewing or replacing assets.

TRCA invests in condition assessments to gain the critical knowledge needed to determine the lowest lifecycle strategies. Figure 16 illustrates the typical deterioration of an asset.

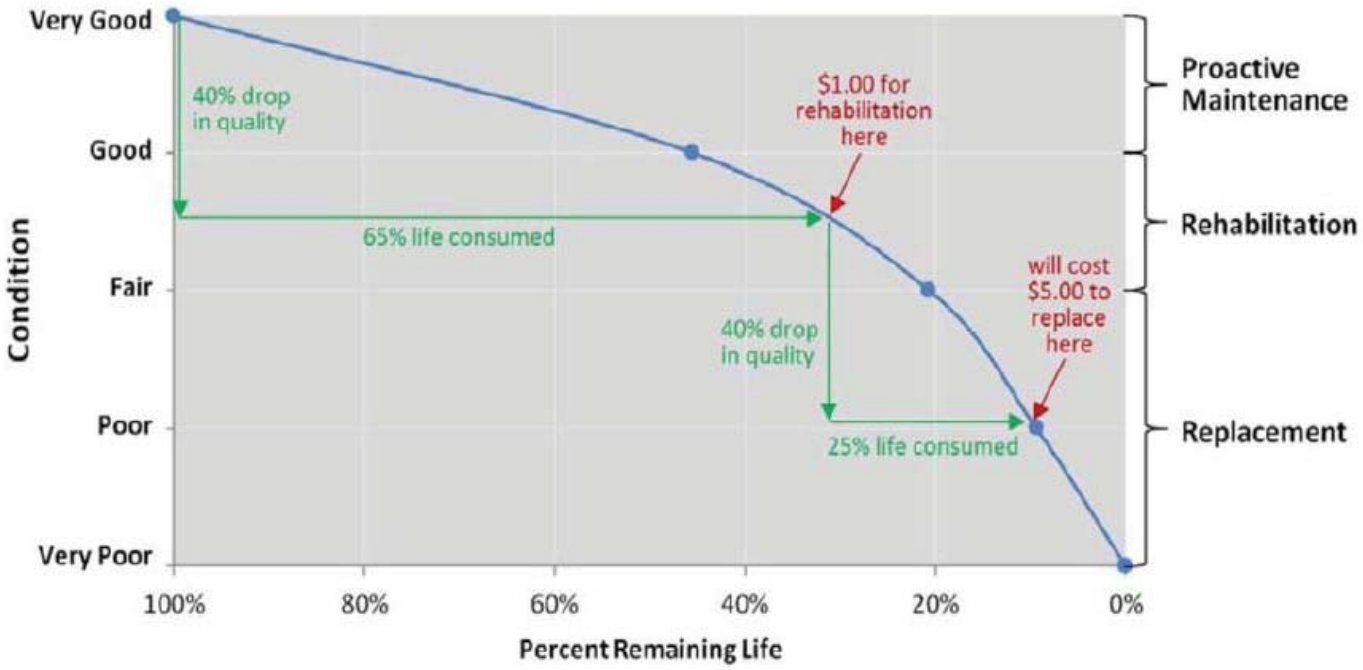


Figure 16 - Asset Decay Curve

4.3.5.2 Condition Assessment Programs

Accurate and comprehensive data on an asset's current condition are fundamental to good asset management practices. Complete information regarding the infrastructure mitigates premature replacement or failure of assets. Sound management decisions regarding capital expenditures, and operations and maintenance activities are based on a clear understanding of an assets condition and performance. For the asset classes, has followed a more cost-effective cursory approach using metrics such as Very Good, Good, Fair, Poor, or Very Poor. This approach allows for an overview of the assets and indicates which assets (for example, those in Poor and Very Poor condition) require more detailed inspections and assessments.

Integrating condition assessment programs into asset management practices provides many benefits. A better understanding of asset condition leads to more sound management practices and allows for the minimization of unnecessary expenditures. It also enables accurate asset reporting of asset valuations and service life, contributes to the maintenance of target LOS, and enables better decision making. Combined with risk management frameworks, it allows for the identification of potential future failures, leading to the establishment and scheduling of repairs, preventative maintenance, and rehabilitation programs in a financially accountable and transparent manner.

4.3.5.3 Investment Planning

The Investment Planning Process (Figure 17) supports the Town's ability to provide target LOS and implement the delivery plan. This process focuses on linking investment decisions on infrastructure to customer-oriented service delivery. Overall, the Town follows the Investment Planning Process by identifying goals/objectives, establishing needs, evaluating a variety of feasible solutions, prioritizing the solutions, and developing investment plans based on the selected options.

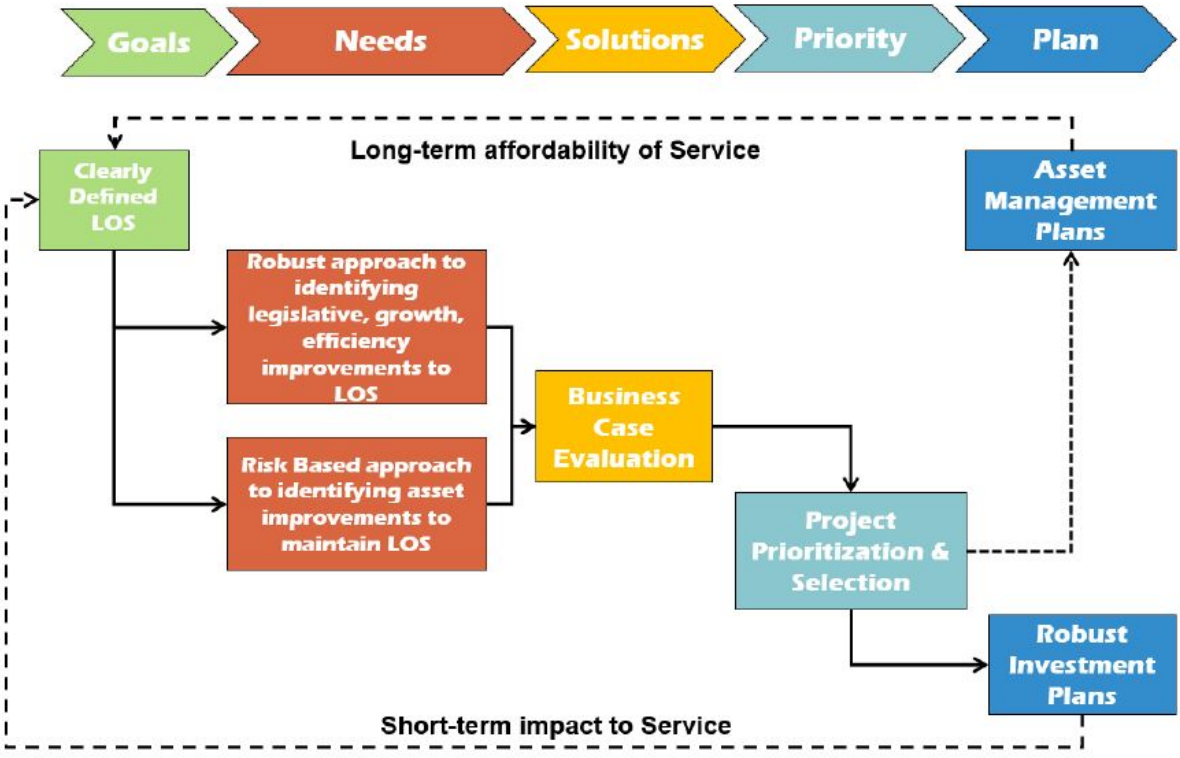


Figure 17 - Investment Planning Process

4.3.6 Capital Prioritization Process

TRCA develops its asset renewal strategies through an annual prioritization process of service area asset renewal submissions. The prioritization of the TRCA's capital needs is delivered annually to Board of Directors the budget and business planning process. Capital needs are not only prioritized at the departmental level as detailed above but are also prioritized at the corporate level. Corporate prioritization of capital needs is undertaken by the TRCA to assist in the decision-making process for the identification of the most critical projects across the corporation, and for the allocation of limited financial resources to fund asset renewal for the various service areas most in need. The capital prioritization results are reviewed by Senior Management through a variety of filters, and adjustments are made to ensure the most critical needs are approved for the delivery of the TRCA's Asset Management Strategy. The five categories used by the corporate capital prioritization process are defined below:

- **Mandatory:** These projects have locked in commitments or vital components associated with cash flowed projects approved by Board of Directors in prior years. These projects have prior legally binding commitments where contracts are signed or have a minimum legal, safety, regulatory or other mandated minimum requirements where not achieving these requirements will lead to legal action, fines, penalties or the high risk of liability against the TRCA. These projects cannot be deferred or stopped;
- **Critical:** These projects maintain critical components in a state of good repair and at current service levels. If not undertaken, there would be a high risk of breakdown or service disruption;
- **Efficiency or Cost Savings:** Projects that have a break even or positive return business case over the life of the capital due to operational cost savings or cost avoidance;
- **State of Good Repair:** The funding for these projects are needed to maintain targeted service levels and reflects life cycle costing; and
- I**mprove:** These projects provide for service enhancements

4.3.7 Asset Resiliency

Resilience is managing changes, such as undesired events and financial shocks while continuing to deliver important services without introducing significant impacts to revenues or spending. Assets themselves and how they are built need to provide an ability to adapt to changing conditions. These changes can be related to shifts in demographics, a changing climate, globalization, or evolving technology.
We will go beyond minimum compliance solutions, to enable our assets to meet future challenges, including changing demographics and populations, customer expectations, legislative requirements, technological, and environmental factors.

As an example of flood infrastructure, weather is unpredictable and extreme events can happen at any time and flooding remains a serious threat to the GTA. Climate change may increase the likelihood of such events. Extreme events combined with the dense urbanization of watersheds increase the stresses placed upon the flood infrastructure and with many forces acting upon these structures that reduce their effectiveness in preventing flooding. To respond to this threat, TRCA will ensure that flood infrastructure is performing at the highest level of protection. Rigorous monitoring, well designed repairs and stable funding will ensure that flood infrastructure will continue to provide protection from future extreme storm events.

TRCA support municipal flood emergency planning by providing technical advice pertaining to flood risk. The Flood Contingency Plan is intended for all public officials and agency staff likely to play a role in the prevention, mitigation, preparedness, response and recovery pertaining to flood events. This version of the Flood Contingency Plan provides general information on the Flood Forecasting and Warning program for each GTA Conservation Authority, as well as specific information and contacts for municipalities within TRCA's jurisdiction.

4.3.8 Resource Management and Development

Resource strategy includes analysis to determine the best way to create resources needed to deliver asset management objectives and asset management plans. Resource management implements the resource strategy by planning and allocating resources to enable the asset management plan to be carried out efficiently and safely. It includes developing an Asset Management Competency Framework focused on key asset management functions across the different business areas, the evaluation of work priorities and risks where there are inefficient resources to deliver planned activities across the different business areas.
Communicate to affected staff the strategy and the associated outputs explaining the principles and the role they play in fulfilling the TRCA's objectives.

4.3.9 Demand Management

A demand management strategy is utilized to ensure the effectiveness of an asset's capabilities as it relates to asset condition, performance throughout the asset lifecycle demands. Demand analysis typically includes the analysis of future demand for the product or services being offered, and the requirements this demand will place on the asset portfolio. TRCA will adopt and develop a long-term demand management forecast for all major service areas.

There are several elements of Demand analysis that need to be considered:

- Historic Demand
- Drivers for demand
- Future demand and change in demand over time
- Changes in required levels of service
- Current and future utilization and capability of assets
- Impact on future performance, condition and capability

4.3.10 Asset Reporting

1. Develop and Implement Asset Management Plans (AMP) by Major Asset Classes.
2. Develop a more detailed state of the asset report that will be derived from the Asset Management Plans for each of the delivered services that will provide detailed information related to the state of the TRCA's assets.
3. State of Good Repair (SGR) Reports shall be prepared and submitted to TRCA's Board. SGRs will include:

- Entire life cycle and associated costs related to the assets, including the risk of asset failure and deterioration forecasts;
- Risks to service level provision and risks of increased future financial burden;
- The financial viability of the options considered;
- Opportunities to fund required life cycle activities not yet undertaken.

4.3.11 Asset Management Performance Measurement

Performance indicators and targets are commonly used to describe, quantify, and communicate the services that the customers expect to receive, and relate the expected LOS into the cost required to provide the services.

Effective monitoring of asset performance and health is essential for good asset management. A robust measurement framework includes measures and indicators that relate to the performance and health of assets and asset systems. The term 'asset health ' is used in relation to measures that monitor the current (or predicted) condition or capability of an asset to perform its desired function, by considering potential modes of failure.
Through the performance of the Asset Life Cycle Asset Management, data will be developed to identify the following.

- Performance of the asset (budget vs. actual, quality and performance)
- The condition of the asset (asset value, cost of service, depreciation)
- Reason for failure of the asset (probability and cause, consequences of failure)
- Criticality of the performance or failure of the asset (asset interrelationships, impact on other assets)
- Higher performance level
- Lower total costs
- Greater consistency
- Increased confidence
- Optimized decision making through costs, risks, performance, and sustainability

4.3.12 Procurement Methods

Toronto and Region Conservation Authority's (TRCA) CS-3.01 Procurement Policy and procedures. The procedures outlined in this document supplement the Policy by providing more clarity and detail on each step throughout the procurement life cycle. The procedures comply with applicable guidelines and reflect TRCA's organizational structure, governance framework, and enterprise systems.

The Purchasing Bylaw guide all procurement practices. The Purchasing By-laws are designed to provide fundamental support for TRCA's governance and internal control frameworks. The by-laws establish standards for ensuring competitiveness, objectivity and fairness in the procurement processes. They also offer a variety of methods for purchasing goods and services to ensure the best procurement options are used and relating

Key objectives of the bylaws are to:

- Encourage competitive bidding
- Ensure objectivity and integrity of the procurement process
- Ensure fairness between bidders
- Maximize savings for the taxpayers

4.4 Continual Improvement and Innovation

The Asset Management Plans (AMP) is a living document that continually adjust to reflect the evolution of asset management.
Asset Management Plan details will be reviewed on an ongoing basis to ensure efficient and effective service delivery to clients and the public.
Staff engagement and promoting a culture that fosters and implements improvement ideas as they are brought forward from all levels within the organization and from external stakeholders.

AMPs should be continuously evaluated and improved through clearly defined actions such as:

- Ongoing Building Condition Assessments (BCA)
- Review of asset performance
- Up-to-date inventories
- Updates to asset information
- The inclusion of unplanned corrective maintenance expenditures
- Updates to preventative maintenance plans
- Performance of metric reviews
- Return on Investment reviews
- Life Cycle Costing Index reviews
- Review of new trends and technologies

4.5 Financing Strategy

The financial strategy integrates asset management planning with financial planning and budgeting. Financial management principles for asset-intensive organizations include recognizing the consumption of asset service potential (degradation of assets), categorizing expenditures by lifecycle activity, allocating costs to assets as far as practical, preparing long-term forecasts, cost-effective financing, and effective reporting of financial performance.
The importance of the assets to the community along with their significant capital and operating budget implications are intended to inform TRCA's long-term financial and service delivery planning.

5 Integrated Asset Management

In order to implement the TRCA Asset Management Strategy, TRCA's intent is to prepare Asset Management Plans for the following Asset Classes:

- Flood Control Infrastructure and Buildings
- Erosion Control Infrastructure
- Administration Buildings
- Conservation Parks
- Education Centres
- Passive Greenspace and Trails
- Property Management
- Vehicles and Equipment

These assets are essential to supporting TRCA's watershed management responsibilities and have significant budget implications. Therefore, they form an integral part of the TRCA's long-term financial and service delivery planning.

5.1 Integrated Asset Management Planning

Integrated Asset Management Planning provides a clear line-of-sight between long-term sustainability goals, departmental operational planning, budgeting, and resource allocation.

Along with the Asset Management Policy, the Asset Management Strategy is a key component of the planning integration process. Important to the success of the integrated planning process is the development of Asset Management Plans. Asset Management Plans will allow TRCA to make the best possible decisions regarding the construction, operation, maintenance, renewal, replacement, expansion, and disposal of all tangible capital (physical) assets. The integrated asset management planning process will also facilitate effective asset management that minimizes risk and costs and maximizes the services provided by the assets.

TRCA will prepare individual Asset Management Plans organized by TRCA asset portfolios that service specific TRCA programs. These Plans are intended to include information related to all of the key physical assets that are required to support the delivery of a specific service by an individual business unit as depicted in Figure 18.

The Asset Management Plans Will integrate all components of the planning process including long-term planning, strategic planning, accountability, risk management, operational execution, performance reporting, Long Range Financial Plan, and budget.

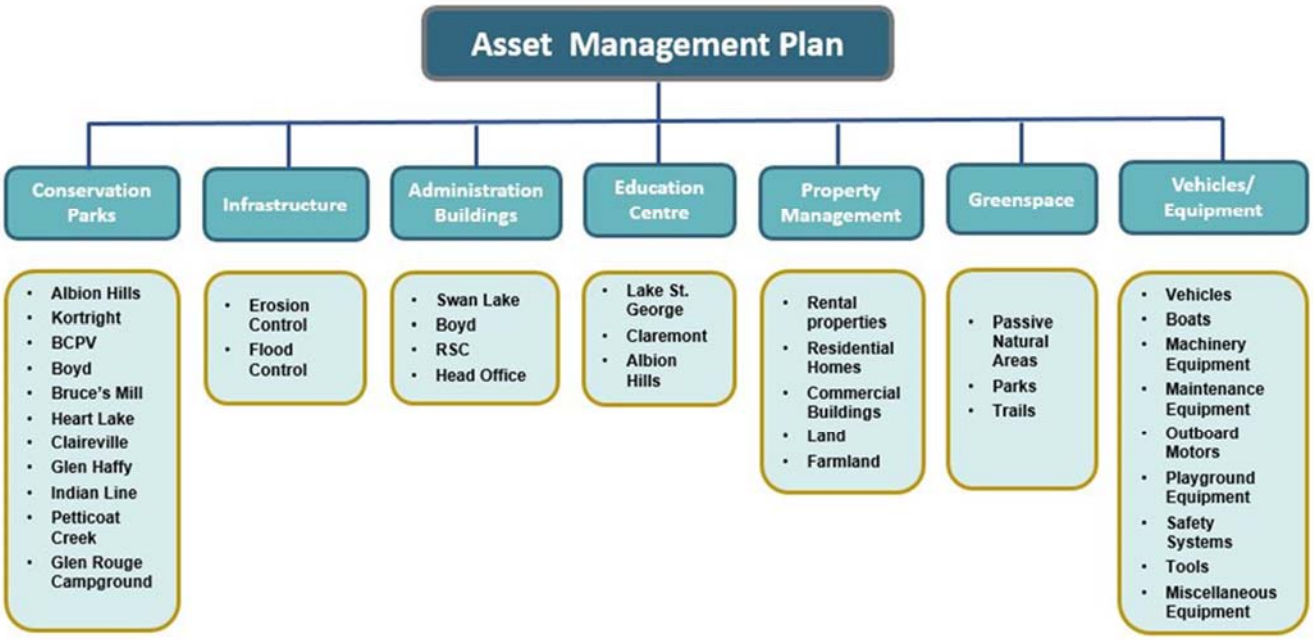


Figure 18 – TRCA Proposed Asset Management Plans

5.2 Asset Management Plan Development

The Asset Management Plans specify the activities that TRCA intend to undertake to deliver its Asset Management objective, along with the resource required, timescale and cost for completion, and responsibility for delivery. The plan will need to be revised periodically to reflect decisions resulting from the integrated planning process. Decisions can be made with the full understanding of the assets needed to support the delivery of the service. TRCA Asset Management Plan will:

- Outline long term goals, processes and steps to deliver optimized whole life cycle cost;
- Be based on current inventories and conditions, projected performance and remaining service life, and consequences of failures;
- Outline guidelines and processes to developing a sustainable financial plan with understanding of risk and financial requirements and impacts on the levels of service.
- Define Levels of service and performance measures.
- Management techniques to assist in making long-term funding decisions.
- Define Lifecycle activities to operate, maintain, renew, and dispose of assets.
- Budget forecasts for growth and renewal to sustain the asset portfolio.
- Outline opportunities to include green infrastructure in asset management planning in cooperation with municipalities and other TRCA partners, where applicable.

The TRCA's first Asset Management Plan (AMP) will be developed following the Provincial requirements as outlined in Building Together – Guide for Municipal Asset Management Plans, as well as guidance provided in the International Infrastructure Management Manual. The Province created Ontario Regulation 588/17 - Asset Management Planning for Municipal Infrastructure under the Infrastructure for Jobs and Prosperity Act. O.Reg. 588/17.

The plan includes the following sections listed below:

- Executive Summary
- Introduction
- State of Local Infrastructure
- Expected Levels of Service
- Asset Management Strategy
- Financing Strategy
- Plan Improvement and Monitoring

TRCA intends to build individual departmental service area plans which will in turn consolidate into the ultimate corporate plan. The AMP will require “bottom-up” information as shown in (Figure 19).

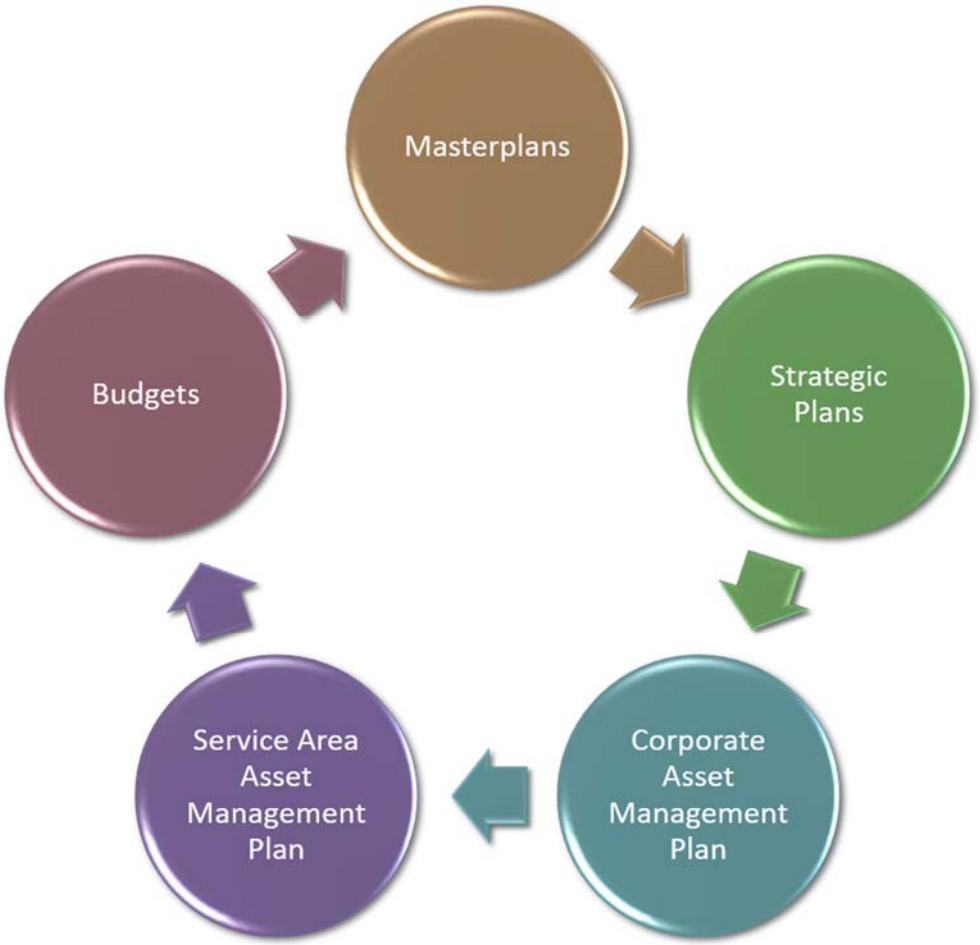


Figure 19 – AMP Development Methodology

GLOSSARY OF TERMS

Asset Capital
Asset capital is defined as equipment which is fixed, built-in or permanently affixed to a building structure. It can also refer to infrastructure

Asset Management (AM)
AM is the process of making the best possible decisions regarding the construction, operation, maintenance, renewal, replacement, expansion and disposal of infrastructure assets.

Asset Management Plan (AMP)
An AMP is an integrated, life-cycle approach to effective stewardship of infrastructure assets to maximize benefits, manage risk and provide satisfactory levels of service in a sustainable and environmentally responsible manner. The overall asset management process analyzes an organization's objectives and determines reliance on infrastructure, and then develops a plan to provide the supporting infrastructure services at the lowest life-cycle cost.

Asset Management Planning
Asset Management Planning is the process of making the best possible decisions regarding the construction, operation, maintenance, renewal, replacement, expansion and disposal of infrastructure assets. Asset management planning requires a thorough understanding of the characteristics and condition of infrastructure assets, as well as the service levels expected of them. It also involves setting strategic priorities with investments and identifying critical assets for the development of a minimum life cycle cost. Finally, it requires the development of a Budget and Business Plan, to ensure that sustainable funding is provided to support the Asset Management Plan.

Asset Management Strategy (AMS)
The AMS is the set of planned actions that will enable the assets to provide the desired levels of service in a sustainable way, while managing risk, at the lowest life-cycle cost (e.g., through preventative action). The AMS is the set of actions that, taken together, has the lowest total cost — not the set of actions that each has the lowest cost individually.

Book Value
An asset's initial book value is its actual cash value or its acquisition cost

Building Condition Assessment (BCA)
The BCA is the first part of a capital reserve plan. The report describes:
• the condition of the capital items;
• when they are anticipated to be replaced;
• how much the replacement would cost at the present day and in the anticipated year of replacement;
• what priority to give the replacement.
The BCA is based on a review of property documents and a review of the capital items.

Hard Assets
TRCA assets, which include buildings, equipment, and infrastructure.

Life Cycle Costing (LCC)
Life Cycle Costing looks at the total cost of an asset over its entire useful life, from construction to disposal, including operating costs.

Line of Sight
Providing a **clear Line of Sight** - a key job of leadership. A "**line of sight**" means that everyone is able to describe how their current work is part of the larger vision and the organization's core strategies.
A technique that ensures a transparent view of strategic intent through to benefits realization.

Net Book Value
An asset's original price minus depreciation and amortization

Real Assets
TRCA real assets including lease agreement inquiries coming from external organizations and pertaining to TRCA-owned or TRCA-managed land.

Preventative Maintenance Program
Inspection, testing, and calibration of electrical and mechanical instrumentation and control equipment performed and documented by fully-trained and qualified technicians as is recommended by the original equipment manufacturer (OEM).

Tangible Capital Assets (TCA)
The Tangible Capital Asset was established in accordance with public accounting standards PS3150 which required the public sector to capitalize its assets. The policy clarifies the asset categories, how the assets are amortized and thresholds for recognizing the assets from a financial perspective.

Value Optimization (VO)
considers the value of the asset system in addition to asset costs. It aims to deliver the best ratio of benefit (in terms of delivering the organization objectives) and life cycle cost.