COMPREHENSIVE ASSET MANAGEMENT STRATEGY

**APPROVED BY
SENIOR MANAGEMENT COMMITTEE
ON AUGUST 23, 2012**

(TO BE FINALIZED AFTER APPROVAL OF CAM POLICY BY COUNCIL)

Ottawa

August 2012

Contents

Executive Summary

Comprehensive Asset Management (CAM) is the effective management of all tangible capital (physical) assets that the City uses directly or indirectly to deliver services to its customers. Effective asset management requires guidance from top management and delivery by empowered and well-trained employees.

The Comprehensive Asset Management Policy defines Council's expectations around the management of the City's physical assets. The Comprehensive Asset Management Strategy articulates senior management's commitment to implementing the policy, including the necessary resources and timescales for implementation.

The purpose of the CAM Strategy is:
- To develop a set of actions aimed at improving and sustaining asset management practices across the organization.
- To ensure that these practices are applied consistently across the organization.
- To help the City maintain its assets at appropriate condition levels by applying the right intervention, on the right assets, at the right time recognizing risk and affordability.

While the CAM Policy is expected to remain relatively constant over time, the CAM Strategy will evolve in response to internal and external changes or challenges faced by the City.

Section 1

Introduction

1.1 The Need for a Comprehensive Asset Management Strategy

The City of Ottawa is a complex service delivery organization with responsibility for managing over $32 billion (2012) in physical public assets, as depicted in Figure 1. It also has more than 100 different public services, many of which rely on physical assets to support their delivery, namely:

- Civic Facilities
- Corporate Realty
- Culture
- Drinking Water
- Fire
- Fleet
- Forestry

- Housing
- Information Technology
- Libraries
- Long Term Care
- Paramedic
- Parks and Recreation
- Police

- Solid Waste
- Storm Water
- Transit Services
- Transportation
- Wastewater

Figure 1 - Summary of City Assets

To fulfill its obligations of service delivery to the community, the City must ensure that the assets supporting these services are managed in a way that balances service levels, risk and affordability. The majority of these assets are long-lived, with useful lives measured in decades. These assets require significant ongoing investment in operation, maintenance and renewal activities to ensure they are safe, structurally sound and fit-for-purpose to support the delivery of services.

The importance of the assets to the community along with their significant capital and operating budget implications need to form an integral part of the City's long term financial and service delivery planning. In the past, infrastructure investments were focused on addressing the funding needs required to support growth, not maintaining the existing asset base. The infrastructure built as a result of the significant growth that has taken place since the 1950's is reaching a stage where significant investment is needed to renew existing assets. This is creating funding pressures in having to adequately balance capital investments between growth and renewal. A manageable approach to address this requirement will need to carry over several decades; thus the need for a comprehensive asset management strategy.

1.2   Comprehensive Asset Management Defined

Comprehensive Asset Management (CAM) is the effective management of all tangible capital (physical) assets that the City uses directly or indirectly to deliver services to its customers. As a business practice, asset management is based on the pillars of sustainability (economic, environmental, social and cultural), integrated risk management, and lifecycle costing. The following definition has been adopted for the City:

Comprehensive Asset Management is an integrated business approach involving planning, finance, engineering, maintenance, and operations geared towards effectively managing existing and new infrastructure to maximize benefits, reduce risk, and provide safe and reliable levels of service to community users. This is done in a socially, culturally, environmentally, and economically conscious manner.

CAM relies on four key organizational components integrating together to achieve the desired service outcomes: well planned strategies, good physical assets, highly trained professionals with respect to practices and procedures, and integrated business processes. These components, supported by the appropriate technology, provide a robust foundation for efficient service delivery.

A CAM approach allows the City to define the:
- Inventory and value of the assets needed to support the delivery of services.
- Asset condition and expected remaining service life.
- Level of service expectations, costs, and what needs to be done to achieve those levels.
- Interventions required on the assets, and when these are most appropriate to ensure assets remain safe for sustained the service.

- Cost to acquire, operate, maintain and renew while maintaining an acceptable level of risk.
- Appropriate investment levels to ensure long-term affordability.

1.3   Purpose of the Comprehensive Asset Management Strategy

Effective asset management requires guidance from top management and delivery by empowered and well-trained employees.   The CAM Strategy is the overarching document that sets out the long-term systematic approach to the management of the assets and the further development of the City's Asset Management practices, derived from the Council approved Comprehensive Asset Management Policy (Appendix A).

The CAM Policy defines Council's expectations around the management of the City's physical assets and the CAM Strategy articulates senior management's commitment to implementing the policy, including the necessary resources and timescales for implementation. It is anticipated that the CAM Policy will remain relatively constant over time; whereas, the CAM Strategy will evolve in response to internal and external changes or challenges faced by the City.

The CAM Strategy is aimed at supporting the delivery of the CAM Policy, which in turn supports delivery of the City's corporate strategic goals and provides oversight for the lifecycle activities required to support these goals. This approach provides a clear "line-of-sight" between Council's priorities and the day-to-day activities and resources that are required to support service delivery.

The purpose of this CAM Strategy is:
- To develop a set of actions aimed at improving and sustaining asset management practices across the organization.
- To ensure that these practices are applied consistently across the organization.
- To help the City maintain its assets at appropriate condition levels by applying the right intervention, on the right assets, at the right time recognizing risk and affordability.

SECTION 2
Comprehensive Asset Management Governance Structure

2.1 Governance Structure

The CAM governance structure is a foundational element of the City's Asset Management Program. As shown in Figure 2, it provides guidance on the development of asset management tools, guidelines and processes, and it provides oversight on their application across the organization.

Figure 2 - CAM Governance Structure
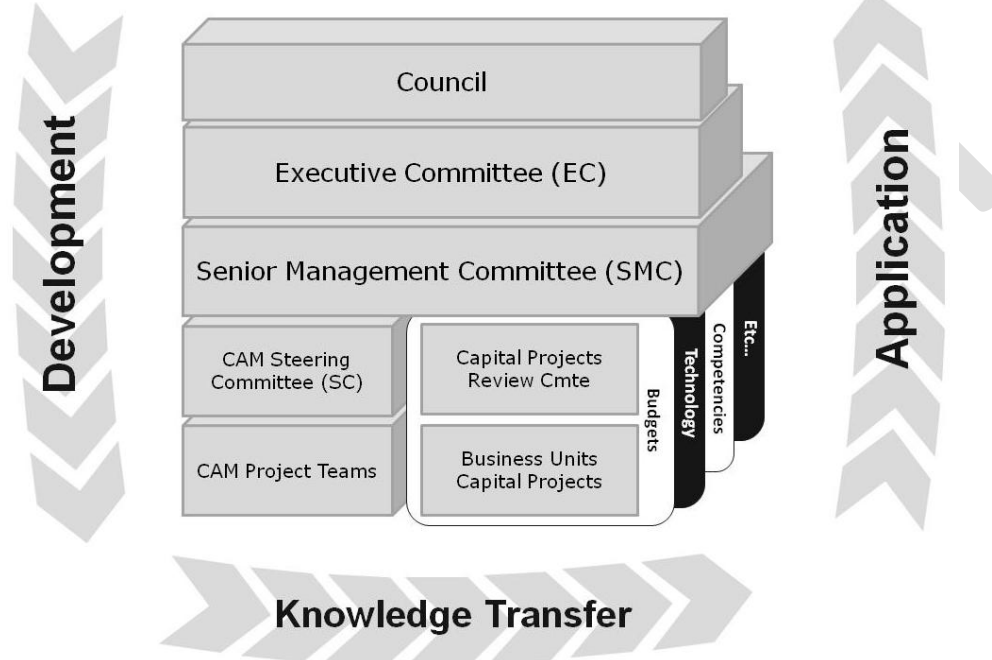
On the development side, the following represent key roles:

Senior Management Committee:
- Endorses the CAM Policy for approval by Council and the CAM Strategy.
- Provides overall guidance and direction for development and application of asset management initiatives.
- Ensures that adequate resources are available for development and implementation of these initiatives.
- Reviews the overall performance of the Asset Management Program and reports to Executive Committee.

- Provides leadership in embedding asset management practices across the organization.

CAM Steering Committee:
- Develops the practices to support the CAM Strategy.
- Oversees the development of Asset Management Plans.
- Provides strategic direction on the implementation of technologies and competencies needed to support the management of the City's assets.
- Monitors progress and performance of the asset management practices and reports to Senior Management Committee.
- Ensures consistency and continuous improvement of asset management approaches across the City's service areas

CAM Project Teams:
- Set up as required by the Steering Committee.
- Work on specific initiatives.
- Develop approaches, protocols, tools & techniques for use across the City.

The structure to support the application side of governance is expected to evolve. This is an important element to ensure practices are thoroughly embedded across the business areas of the organization.

2.2 Comprehensive Asset Management Framework

The CAM Framework, as shown in Figure 3, represents how all the elements of an asset management system come together to support the "line-of-sight" between the corporate goals and day-to-day decisions. These elements are divided in 4-key groupings:

- *Visioning:* *Defines 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.*
- *Strategic:* *The CAM Policy articulates Council's expected outcomes around how physical assets are to be managed and the CAM Strategy defines senior management commitment to achieving the policy objectives.*
- *Tactical:* *Provides guidance and consistency in documentation and implementation of asset management practices across services areas.*
- *Operational:* *Applies the asset management practices across service areas.*

Figure 3 - CAM Framework

Figure 3 - CAM Framework

SECTION 3
Comprehensive Asset Management Objectives

3.1 Comprehensive Asset Management Vision

Vision: *"The City consistently meets approved customer service outcomes at a level that is safe and affordable."*

3.2 Comprehensive Asset Management Objectives

- *Our value-for-money service proposition must be underpinned by 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 assets may be of variable condition; it is the service they support and the cost to operate and maintain that are of prime importance.*
- *Our asset management practices will have both an outward focus on community benefit and an inward focus on efficiency and affordability.*

3.3 Comprehensive Asset Management Philosophy

The philosophy underlying AM within the City is as follows:

- *Inclusive:* Involvement of stakeholders, including the community and staff, in defining and developing strategies, policies, levels of service, delivery of services, and in the decision making concerning the City's infrastructure.
- *Effective:* Adoption of good, or where proven, cost-effective best practices in asset management.
- *Affordable:* Achievement and maintenance of affordable investment levels for all City assets.
- *Integrated:* Collaborative approach to supporting the delivery of services.

This will enhance the City's "Plan-Do-Check-Act" model, which takes into account long-, medium-, and short-term asset management needs to deliver coordinated and integrated investment in terms of capital projects and operational tasks.

3.4 Alignment with Corporate Objectives

How the City's assets are managed plays a key role in achieving the City's strategic goals and objectives in a manner that is affordable, culturally beneficial, socially and environmentally responsible.

3.4.1   Affordability and Economic Viability

Both the City's Long-Range Financial Plan (LRFP) (2006) and Fiscal Framework (2007) outline that a municipality's long-term financial performance is only sustainable when the planned long-term infrastructure interventions, as required by the defined levels of service, can be met without resorting to unplanned increases in rates or disruptive cuts to services.

More specifically, a municipality is considered financially sustainable when the following conditions are met:
- There is a reasonable degree of stability and predictability with respect to taxation;
- Future generations will not face massive decreases in services or unreasonable property tax rate increases to deal with items deferred from this generation;
- The current generation does not bear a disproportional burden of funding items that will benefit future generations; and
- Council's highest priority programs (both capital and operating) can be maintained.

As referenced in the 2006 LRFP, in recognition of the need to establish an appropriate balance between developing new assets and maintaining its existing asset base, the City is committed to managing its assets in accordance with sound, industry-recognized financial asset management practices.

These practices include:
- 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.

To accomplish this requires the integration of Asset Management Plans with the City's long-term community and financial plans.

3.4.2   Environmental Responsibility

Decisions need to consider environmental factors over the entire lifecycle of the proposed asset. These considerations should inform asset planning, design, tender specifications, construction materials selection and techniques, operating models, and disposal procedures. In addition, the impacts of climate change (including increased potential for flooding and/or drought, freeze-thaw cycles) need to form part of decisions for assets with longer lifecycles that may be significantly affected by these changes.

Environmental responsibility goes beyond managing hard physical assets in an environmentally conscious manner. The need to effectively manage green assets (trees, green spaces) to deliver environmental, economic, and social benefits to the

community is also important. Similar to infrastructure assets, green assets need to be managed from a lifecycle perspective.

3.4.3   Social Equity

"*Sustainability is about making sure that the decisions we make today positively impact every facet of our community's framework for future generations.*"[1] The CAM Strategy and related supporting documents will inform decision making so that issues such as access, equity, health and safety are taken into consideration during service/asset planning.

Infrastructure assets need to be designed and managed with the needs of growing and changing demographics in mind. This includes particular attention to specific social demographics (such as youth, people with disabilities, and older people), accessibility and social housing needs.

3.4.4   Cultural Vitality

Cultural vitality expands our way of thinking and both influences and enhances the way we live. The City has adopted *Culture and Identity* as the 4th pillar of a sustainable society, equally as important as social equity, environmental responsibility and economic viability. Asset planning needs to take into account the need for "green developments" with a mix of land uses, housing types that provide opportunities for the public to engage with each other, with places designed with specific spaces that support unique sub-cultures where possible.

Heritage represents a significant element of our culture. Managing the condition of our heritage buildings is an important component of preserving our past. Culture is also expressed through public art. These assets also need to be maintained as any other municipal asset.

3.4.5   Integrated Asset Management Planning

In June of 2011, Council adopted the Corporate Planning Framework (CPF). The need to increase the integration of the City's planning tools is well identified through the CPF objectives:
- Enhance the oversight and direction required for the effective execution of Council's priorities;
- Provide a clear line-of-sight between long-term sustainability goals, Term of Council Planning, departmental operational planning, budgeting, and resource allocation;
- Offer a more rigorous approach and process to describing short and long-term quantifiable priorities and driving them into the organization;
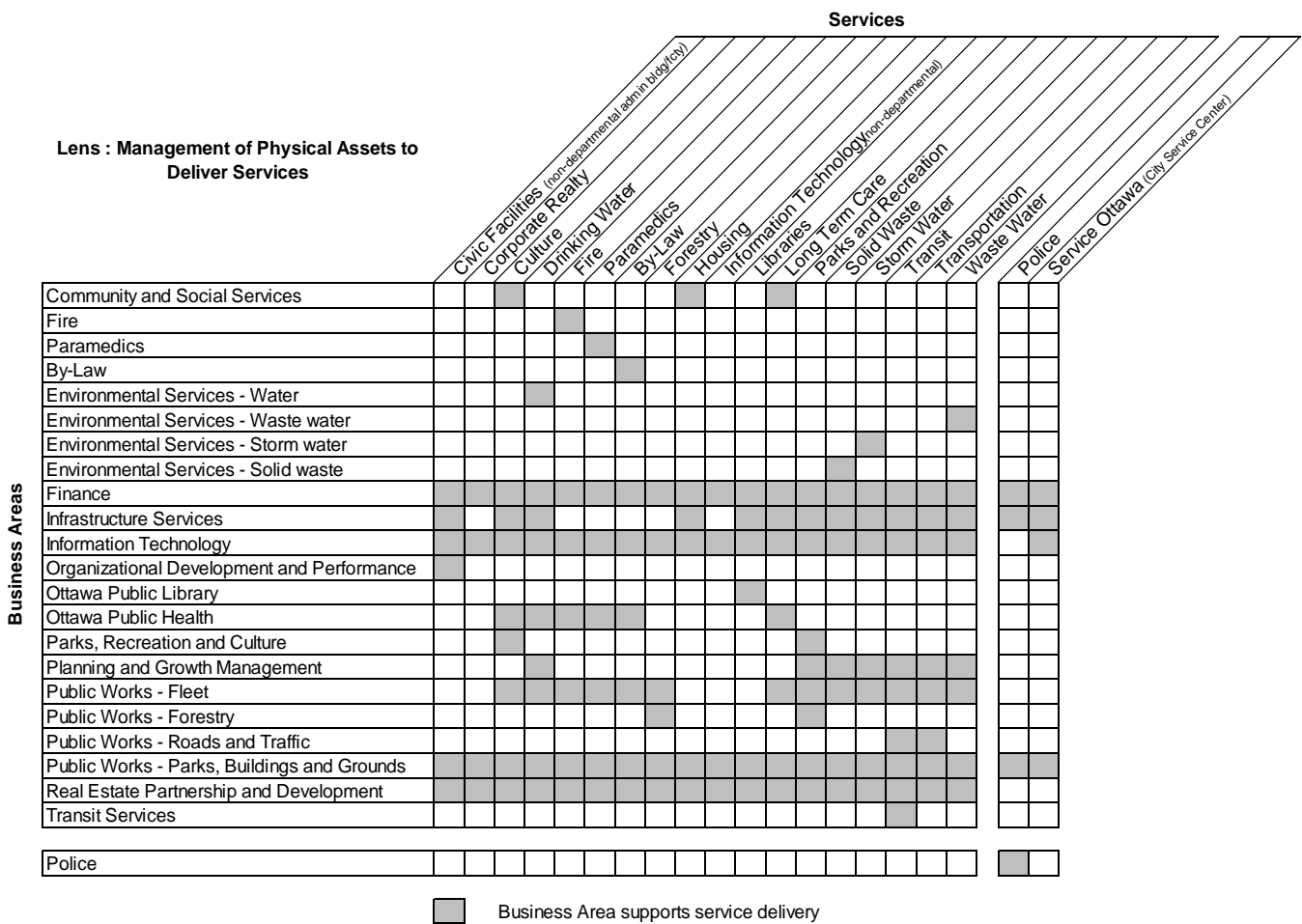
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[1] City Manager's Message, "Sustainability: Working together to build a more liveable capital city today and for the future", 2010

- Increase openness, transparency and accountability in the planning, budgeting and public reporting of financial, strategic and operational service results; and,
- Integrate all components of the planning process including long-term planning, term of Council strategic planning, accountability, risk management, operational execution, performance reporting, Long Range Financial Plan and budget.

Along with the CAM Policy, the CAM Strategy is a key component of that planning integration process. Important to the success of the integrated planning process is the development of Asset Management Plans for each service area. 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.

As such, decisions can be made having the full understanding of the assets needed to support the delivery of the service. As can be seen on Figure 4, this requires the involvement of a number of different business areas.

Figure 4 – Business Areas Contributing To Asset Management (to be updated)

Matrix — Lens: Management of Physical Assets to Deliver Services.

Services (columns): Civic Facilities (non-departmental admin bldg/city), Corporate Realty, Culture, Drinking Water, Fire, Paramedics, By-Law, Forestry, Housing, Information Technology (non-departmental), Libraries, Long Term Care, Parks and Recreation, Solid Waste, Storm Water, Transit, Transportation, Waste Water, Police, Service Ottawa (City Service Center).

Business Areas (rows): Community and Social Services, Fire, Paramedics, By-Law, Environmental Services - Water, Environmental Services - Waste water, Environmental Services - Storm water, Environmental Services - Solid waste, Finance, Infrastructure Services, Information Technology, Organizational Development and Performance, Ottawa Public Library, Ottawa Public Health, Parks, Recreation and Culture, Planning and Growth Management, Public Works - Fleet, Public Works - Forestry, Public Works - Roads and Traffic, Public Works - Parks, Buildings and Grounds, Real Estate Partnership and Development, Transit Services, Police.

Legend: ▢ (gray) = Business Area supports service delivery

SECTION 4
Comprehensive Asset Management Strategies

The objectives of the Council-approved CAM Policy require clearly defined strategies to ensure the alignment between the management of assets and the corporate objectives.

In 2011, an assessment of the current state of practice of asset management at the City was performed. Based on the results of the assessment, a roadmap (Appendix B) was developed highlighting key initiatives and timelines to advance asset management at the City. The roadmap's initiatives relate to Strategy (S), Assets (A), People (P), or Business Processes (BP) and they are identified against each strategy listed below. A complete description of the initiatives and how they were generated can be found in the "Ottawa CAM Assessment and Roadmap" document.

The following sections provide context for the key strategies along with commitment statements and related CAM Roadmap initiatives to help demonstrate the alignment between corporate objectives and the management of assets.

4.1   Systematic Approach

Achieving consistency in the application of asset management practices across the organization requires a well defined approach. This approach needs to be structured and clearly communicated so everyone is aware of their role and is working towards a common purpose: the delivery of services and the City's objectives.

We will:
- *Adhere to internationally recognized asset management practices.*
- *Develop Asset Management Plans for each delivered service detailing all assets required to provide the service to the customers (i.e. drinking water, wastewater, solid waste, libraries, parks and recreation).*
- *Clearly define accountabilities and responsibilities of the various business units related to the different elements of the asset management process so everyone is working towards the most efficient service delivery.*
- *Continually improve asset management tools and procedures and foster the sharing of information across business units so that everyone can leverage the best information available as part of their decision making.*
- *Develop and maintain a library of asset management policies, practices, procedures and standards using standard templates. Define the process to update, maintain and make information available to all staff.*

Related CAM Roadmap Initiatives (Appendix B):
- S1 Develop Corporate and Departmental Strategic Plans with Asset Management Strategies
- S9 Develop and Implement Asset Management Plans (AMP)
- S6 Business Process Mapping and Procedure Master Plan
- S8 Develop the Asset Management Policy and Strategy
- P1 Establish an Asset Management Governance structure
- P3 Develop Effective Communication and Information Sharing Strategies
- BP8 Develop an Asset Management Process Flow
- BP9 Establish Asset Management Procedures and Standards Guidelines
- BP10 Implement a Quality Management and Audit Process

4.2 Levels of Service

The mandate of the City is to deliver services to its customers. The extents to which these services are provided are defined through Levels of Service (LOS). These LOS need to establish reasonable expectations taking into consideration factors such as affordability and risk.

LOS can be measured at three levels:
- *Corporate* – sets the corporate objective, such as providing safe drinking water.
- *Customer* – defines the customer's expectations, such as supply of potable water of good quality, in sufficient quantity and with the few interruptions.
- *Asset (or Technical)* – defines the technical requirements to achieve the service objectives, such as watermain materials with expected service lives of at least 75 years to reduce frequency of failure and associated service interruptions.

Taking this approach to the definition of LOS puts customer requirements at the centre of our planning processes by understanding and quantifying the value that customers place on services. If there was not a service to be provided, there would not be a need for the assets.

We will:
- *Document the LOS at the corporate, customer and asset levels to provide a clear line-of-sight between corporate objectives and asset-focused objectives.*
- *Seek Council endorsement of the corporate and customer LOS enabling the organization to clearly communicate service impacts associated with available operating and capital budgets.*
- *Consult customers on an ongoing basis to understand their needs.*
- *Ensure that all our investment and operational decisions are evaluated against their impact on our customers, the community, and the environment.*

Related CAM Roadmap Initiatives (Appendix B):
- S2 Develop a Levels of Service (LOS) Framework
- S9 Develop and Implement Asset Management Plans (AMP)
- S8 Develop the Asset Management Policy and Strategy

A9   Develop and Implement a Multi-Criteria Analysis (MCA for investments)

4.3   Criticality and Risk Management

Established Levels of Service provide the foundation for the different business areas to make use of this information to assess the risks against achieving these LOS with the current practices and asset base. Using a risk-based approach allows the organization to identify the importance of different assets in supporting the delivery of services. It also provides the ability to take into account the likelihood of asset failure and the associated consequences in terms of impacts on our customers and the City's reputation.

We will:
- *Build on the corporate risk framework and apply proven risk management practices in our decision-making process.*
- *Develop objective, repeatable methodologies, based on quantification and understanding of criticality and risk (likelihood and consequence of failures) allowing us to evaluate assets and adjust our interventions accordingly.*
- *Develop robust forecasts taking into consideration asset criticality and risk changes over time enabling us to determine how to adjust interventions and the level of capital and operational investments needed to sustain the assets over time.*

Related CAM Roadmap Initiatives (Appendix B):
S11   Expand existing Comprehensive Business Continuity Plan and Emergency Preparedness Plan based on asset criticality.
A3   Asset Knowledge- Enhance Asset Data Analysis
A8   Develop a Business Case Evaluation (BCE) Framework
A10   Expand Existing Risk-based Decision Model for Rehab, Replacement, Operation & Maintenance of Assets

4.4   Asset Life Cycle Planning and Optimization

Most of the City's physical assets are long-lived, 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 and not simply the initial cost of acquisition. The whole life costs contribute to decision-support and help optimize capital planning by considering costs of acquisition, financing, operation, maintenance, replacement, and disposal. The latter being important as there needs to be an ability to review assets that may no longer be required as it is generally more cost effective to manage fewer assets, than to manage assets to a lesser standard.

We will:
- *Ensure that modeling, analysis, design and asset planning exercises extend over the entire expected life of the asset.*

- *Assess investment decisions, portfolio rationalization and development approval decisions based on fully documented lifecycle costing models and not solely on the initial capital cost.*
- *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.*
- *Develop and apply a business case evaluation process for capital (renewal and growth) projects that meet a defined threshold. Have those projects assessed against corporate objectives by a "capital projects review committee" comprised of senior, accountable staff to generate the annual capital budgets.*

Related CAM Roadmap Initiatives (Appendix B):
- S7   Development of Growth Plans for each Major Asset Class
- A7   Development of an Investment Strategy
- A8   Develop a Business Case Evaluation (BCE) Framework
- A9   Develop and Implement a Multi-Criteria Analysis (MCA for investments)
- A10   Expand Existing Risk-based Decision Model for Rehab, Replacement, Operation & Maintenance of Assets

4.5   Asset Resiliency

As mentioned previously, the fact that most City assets are long lived—many lasting several decades—means the 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:
- *Strive to go beyond minimum compliance solutions, where reasonable to do so. This will enable our assets to meet future challenges, including changing demographics and populations, customer expectations, legislative requirements, technological, security, third party threats, and environmental factors.*
- *Continually review the materials and products used in the management of our assets to increase the ability to adapt to changing conditions.*
- *Make our assets accessible, where appropriate to do so, addressing the needs of those with disabilities and recognizing changing demographics and Ottawa's aging population.*

Related CAM Roadmap Initiatives (Appendix B):
- S7   Development of Growth Plans for each Major Asset Class
- S10   Compliance with all Legal, Regulatory, and Statutory Requirements

4.6   Service Delivery and Funding Opportunities

How services are delivered and the available funding sources have an impact on the quantity and quality of assets being built. There needs to be an ability to review how

our assets are acquired, built and maintained as these practices have an impact on cost as well as the environment.

We will:
- *Continually seek alternative financing and funding opportunities to help address shortfalls in investment requirements.*
- *Periodically update our competitive service delivery reviews looking at alternative ways of delivering capital projects and acquiring assets.*
- *Periodically review and update project delivery processes, workflows and project management guidelines to ensure optimal returns.*
- *Reduce the environmental impact of our capital projects, and the energy required to operate and maintain these assets.*

Related CAM Roadmap Initiatives (Appendix B):

P6   Commercial Focus—Operations & Maintenance (Alternative Delivery Methods)

BP1   Commercial Focus – Project delivery (Competitive Service Delivery Options)

BP3   Create and Update Standard Operating Procedures

BP4   Develop and Implement a Maintenance Management Strategy

BP5   Review and Optimize Materials Management Practices

4.7   Resource Management and Development

Many staff have a role to play in the management of the City'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 management of City assets. This can be accomplished through innovative recruitment, competency development and staff retention strategies, especially for key roles across all functions.

We will:
- *Develop an Asset Management Competency Framework focused on key asset management functions across the different business areas.*
- *Communicate to affected staff this strategy and the associated outputs explaining the principles upon which they are based and the role they play in fulfilling the City's objectives.*
- *Provide education and training opportunities that will support the development of our internal skills and capabilities.*

Related CAM Roadmap Initiatives (Appendix B):

S4   Develop and Implement a People Skills and Competencies Master Plan

P2   Enhance Learning and Development Program

P5   Develop a Comprehensive Knowledge Retention and Succession Planning Program

4.8   Asset Reporting

The ability to make sound decisions requires good information. To be effective this information needs to be communicated in a way that reflects the intended target audience.

We will:
- *Produce an infrastructure report card that will be shared with Council and the community so that the state of the City's assets can be taken into consideration when making infrastructure related decisions. This report will be updated periodically as improved information becomes available, and to include other asset types.*
- *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 City's assets.*

Related CAM Roadmap Initiatives (Appendix B):
S9   Develop and Implement Asset Management Plans (AMP) by Major Asset Classes
BP7   Conduct PSAB Sustainment Review

4.9   Asset Data

Robust, repeatable and transparent decisions can readily be made when the information on which they are based is complete and accurate. In order to help support investment decisions, or to improve monitoring of performance against established levels of service, the City needs to, on an on-going basis, collect, validate and enhance its asset data inventory.

We will:
- *Regularly review and identify critical information needs according to such drivers as business process needs, asset reporting needs, or performance monitoring needs and move towards meeting those data needs.*
- *Use front-line gathered information (high confidence data) such as verified condition or root cause of failure to feed information into all of our AM decision making processes.*
- *Establish and adopt processes to update and maintain high confidence data.*

Related CAM Roadmap Initiatives (Appendix B):
A1   Enhance and Maintain Comprehensive Asset Registry
A2   Develop a Standardized Methodology for the Various Condition Assessment Programs Including Guidelines & Framework
A3   Asset Knowledge- Enhance Asset Data Analysis
A4   Develop Comprehensive Enterprise-wide Document Control Management Program

4.10   Technology Enablers

Technology plays a key role in asset management by enabling people to perform their required tasks in an efficient manner. The need to continue to develop and move towards integrated technology solutions is important for the progression and advancement of comprehensive asset management at the City.

We will:
- *Develop a CAM technology blue-print that is based on business needs and aligned with the corporate technology roadmap.*
- *Commit sufficient resources to deliver technology and support mechanisms required to meet changing business needs.*
- *Review and assess needs and technology to continue progressing towards integrated solutions that support business requirements.*

Related CAM Roadmap Initiatives (Appendix B):
- S5   Develop a Corporate Technology Master Plan (related to physical assets)
- A5   Key Business Applications
- A6   Implement Technology Integration

4.11 Continual Improvement and Innovation

Managing the City's physical assets through their lifecycle requires the contribution of many individuals across several business units. The Comprehensive Asset Management initiative is intended to provide an overarching approach to the management of the City's physical assets. It is recognized that it will evolve over time. As such, there needs to be the ability to foster continual improvement and innovation.

We will:
- *Engage staff and promote a culture that fosters and implements improvement ideas as they are brought forward from all levels within the organization.*
- *Improve our ability to predict the performance of our assets and their ability to support the services they deliver reducing the need to react to problems.*
- *Participate in national and international asset management initiatives that will help to advance our practices.*
- *Actively pursue research and development opportunities through strategic collaboration with other asset management practitioners, research councils, industry and academic institutions.*
- *Seek out and develop wider strategic relationships through collaboration with public and private partners, driving innovation and value.*
- *Seek out and investigate technology, skills and competency requirements.*
- *Continually review our strategies, approaches and methods with a goal of assessing their value and improving them where applicable.*
- *Adopt a philosophy of incremental improvements necessary to sustain CAM awareness and commitment.*

Related CAM Roadmap Initiatives (Appendix B):
- P4   Continuous Improvement Culture (Sustainability)
- BP2 Enhance Existing Project Delivery and Project Management Guidelines

4.12   Asset Management Performance Measurement

The City, through the development of the CAM Policy and the CAM Strategy, has adopted a recognized asset management approach that is based on interacting elements where all contributions are geared towards achieving a common corporate goal – delivering safe and reliable services to residents.

We will:
- *Develop key performance indicators necessary to monitor the performance and effectiveness of the CAM program.*
- *Review and track our progress against the Comprehensive Asset Management Objectives defined in Section 3.*
- *Benchmark our performance against other municipal and internationally recognized best practices.*
- *Steering Committee will monitor all progress made against the CAM Roadmap initiatives and communicate back to senior management for guidance.*
- *Monitor, evaluate and report on the effectiveness of the CAM Policy and the CAM Strategy, and where required adjust those documents to capture and reflect organizational objectives.*
- *Monitor and adapt the AM System as necessary to adhere to internationally recognized asset management practices.*

Related CAM Roadmap Initiatives (Appendix B):
S3   Develop Corporate Key Performance Indicators (KPI)
P1   Establish an Asset Management Governance structure
BP9   Establish AM Procedures and Standards Guidelines

Appendix A - CAM Policy

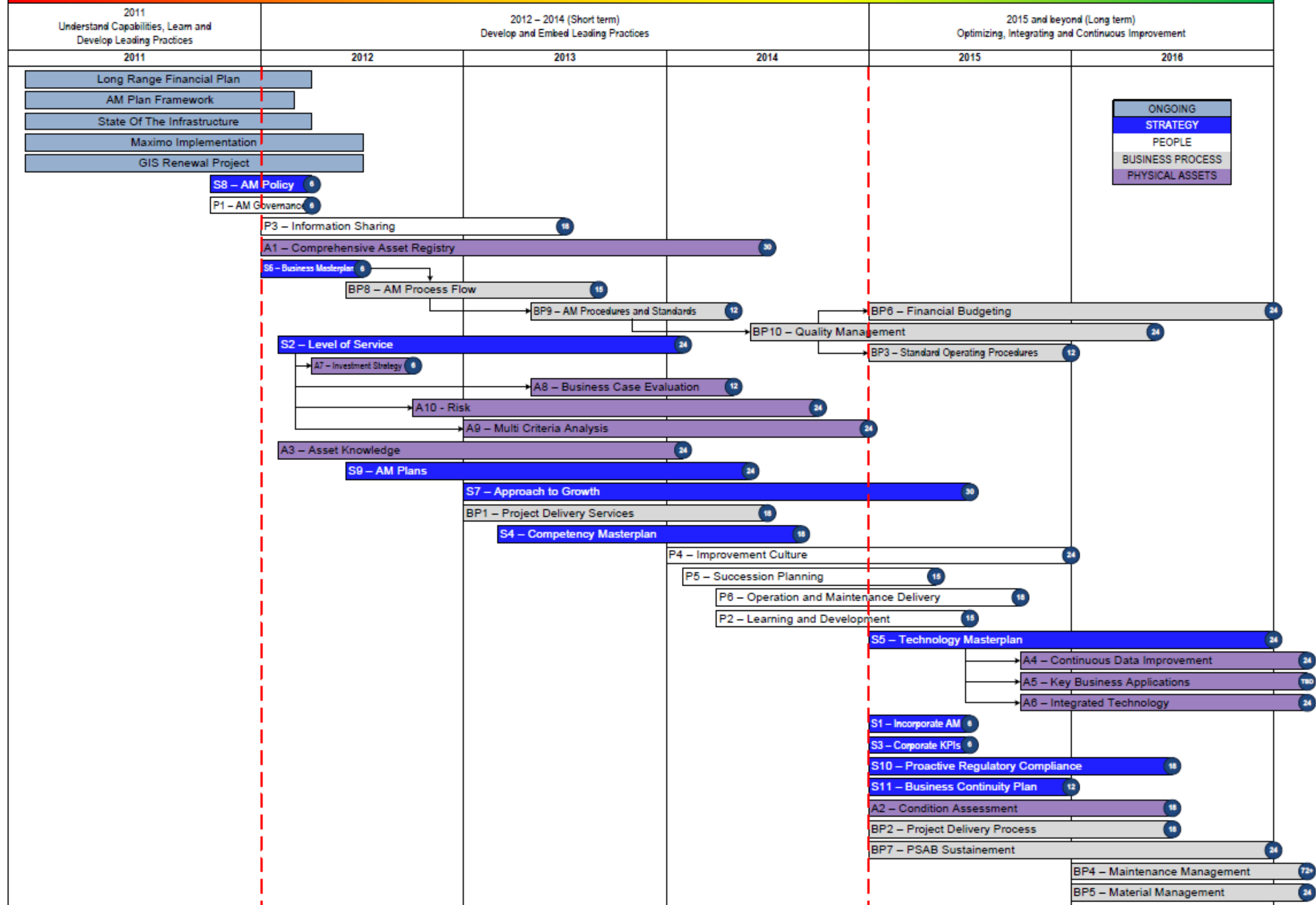**To be inserted after CAM Policy has been approved by Council.**

Appendix B - CAM Roadmap

COMPREHENSIVE ASSET MANAGEMENT ROADMAP