

Report to/Rapport au :

Finance and Economic Development Committee
Comité des finances et du développement économique

and Council / et au Conseil

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Submitted by/Soumis par :

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CITY WIDE / À L'ÉCHELLE DE LA VILLE

Ref N°: ACS2012-PAI-INF-0007

SUBJECT: COMPREHENSIVE ASSET MANAGEMENT PROGRAM

OBJET : POLITIQUE DE GESTION INTÉGRÉE DES ACTIFS

REPORT RECOMMENDATIONS

That the Finance and Economic Development Committee table this report for consideration at a subsequent meeting of the Finance and Economic Development Committee, to be held on 2 October 2012:

1. At its meeting of 2 October 2012, that the Finance and Economic Development Committee recommend Council:
 - a) Receive the Comprehensive Asset Management Program, 2012 State of the Asset Report (Document 1);
 - b) Approve the Comprehensive Asset Management Policy (Document 2);
 - c) Approve an infrastructure renewal funding target, indexed annually to construction inflation, to maintain City assets in a state of good repair, as outlined in this report, to be reached within 10 years and included for consideration as part of each year's draft budget; and
 - d) Approve inclusion of an Asset Management section in all relevant future Committee and Council reports to ensure the long-term infrastructure implications of recommended projects are specifically identified.

RECOMMANDATIONS DU RAPPORT

Que le Comité des finances et du développement économique soumette le présent rapport à un examen lors de la prochaine réunion du Comité des finances et du développement économique, prévue pour le 2 octobre 2012 :

- 1. Qu'à sa réunion du 2 octobre 2012, le Comité des finances et du développement économique recommande au Conseil :**
 - a) de recevoir le rapport sur l'état des biens du Programme de 2012 de gestion intégrée des biens (document 1);**
 - b) d'approuver la Politique de gestion intégrée des actifs (document 2);**
 - c) d'approuver un objectif de financement du renouvellement des infrastructures à atteindre sur une période de dix ans, indexé chaque année au taux d'inflation de la construction, qui permettra d'entretenir les actifs de la Ville et de les conserver en bon état, comme il est indiqué dans ce rapport, et qui soit prévu dans le budget provisoire de chaque année; et**
 - d) d'approuver l'inclusion d'une section sur la gestion des actifs dans tous les rapports futurs pertinents du Comité et du Conseil pour que les conséquences à long terme liées aux infrastructures des projets recommandés soient définies de façon précise.**

EXECUTIVE SUMMARY

The City of Ottawa's physical assets are vast and have a replacement value of more than \$32 billion. Much of this infrastructure was created to support growth as the City's urban area expanded to include suburban areas and to service rural communities. This infrastructure requires continued investment to ensure it is kept in good working order, and it has become a recognized industry best practice to develop Comprehensive Asset Management (CAM) programs to help prioritize these investments and ensure best value for taxpayer dollars. CAM programs are also becoming pre-requisites to secure funding for infrastructure renewal from upper-levels of government.

In recognition of this, in 2011 Council made the creation and adoption of a Comprehensive Asset Management Program a current Term of Council Priority.

Comprehensive Asset Management is an integrated business approach involving planning, finance, engineering, maintenance, and operations. The objective is to effectively manage existing and new infrastructure to maximize benefits, reduce risk, and provide safe and reliable levels of service to community users. Implementation of CAM programs results in timely investments that minimize lifecycle costs and ensure the long-term affordability of assets.

This report delivers on this Term of Council Priority by providing the results of the most comprehensive review and grading to date of the condition of the City's infrastructure assets, including water and sewers, roads, buildings and parks. The review concluded the City's infrastructure is safe and generally in fair to good condition. However, the review shows that our infrastructure is at risk of deterioration and investments are needed. This risk is found consistently among all Canadian municipalities as was reported by the recently released Canadian Infrastructure Report Card.

This report recommends approval of a program and associated target funding policy needed to keep the City's infrastructure in good working order, and that all relevant future Committee and Council reports include an Asset Management section to make sure impacts on the City's infrastructure are considered during the decision making process.

At the heart of the program is a framework aimed at making sure the City targets the right infrastructure renewal investments at the right time. To achieve this, the report recommends Council adopt new levels of service that will allow for a risk-based approach to investment decisions. This means works, including the targeting of condition assessments, with lower risk to service, like resurfacing of local roads, will happen less frequently while works with higher risk to service, like renewal of major highways, happens more frequently. This recommendation is being made in order to extract the most value for money possible by focusing funding where it is most effective.

The report also recommends adoption of a Council policy that will ensure the City is making the level of investment needed and applying the practices needed in order to keep our infrastructure in good working order. This level of funding will be greater than infrastructure renewal funding levels of the past, but the recommended levels are required in order to ensure quality service are delivered to residents in an affordable manner.

Upon Council approval of this level of investment, staff will incorporate it into the forthcoming Long Range Financial Plan for Tax Supported Services.

RÉSUMÉ

Les actifs matériels de la Ville d'Ottawa sont considérables et leur valeur de remplacement dépasse les 32 milliards de dollars. Cette infrastructure a été créée en grande partie pour soutenir la croissance de la ville au fil de l'étalement de la zone urbaine pour inclure des secteurs suburbains et viabiliser les collectivités rurales. Cette infrastructure nécessite des investissements soutenus pour en assurer le bon fonctionnement. L'élaboration de programmes de gestion intégrée des actifs (GIA) pour aider à prioriser ces investissements et obtenir le meilleur rapport qualité-prix pour l'argent des contribuables est reconnue comme pratique exemplaire dans le milieu municipal. Les programmes GIA sont également en train de devenir une condition préalable pour obtenir des ordres de gouvernement supérieurs du financement pour le renouvellement de l'infrastructure.

Cela étant, en 2011, le Conseil a fait de la création et de l'adoption d'un programme de gestion intégrée des actifs une priorité du mandat actuel du Conseil.

La gestion intégrée des actifs est une stratégie organisationnelle intégrée qui comprend de la planification, du financement, de l'ingénierie, de l'entretien et des activités. Elle vise à gérer efficacement l'infrastructure existante et la nouvelle pour maximiser les bénéfices, diminuer les risques et fournir aux utilisateurs dans la collectivité des niveaux de services sécuritaires et fiables. Grâce à la mise en oeuvre de programmes de GIA, les investissements sont faits en moment opportun minimisant ainsi les coûts liés aux cycles de vie et assurant l'abordabilité à long terme des actifs.

Ce rapport s'inscrit dans cette priorité du mandat du Conseil en fournissant les résultats d'un examen des plus complets et de l'évaluation de l'état de l'infrastructure municipale à ce jour, y compris du réseau d'eau et d'égout, des routes, des immeubles et des parcs. L'examen a établi que l'infrastructure de la ville est sécuritaire et, qu'en général, son état est de passable à bon. Toutefois, l'examen indique que notre infrastructure risque de se détériorer et qu'elle a besoin d'investissements à l'instar, par ailleurs, de toutes les autres municipalités au Canada comme le révélait récemment un Bulletin de rendement sur l'infrastructure canadienne.

Ce rapport recommande (i) l'approbation du programme et de la politique afférente de financement nécessaire pour maintenir le bon fonctionnement de l'infrastructure de la ville et (ii) l'inclusion dans tous les rapports futurs au Comité et au Conseil d'une section sur la gestion des actifs pour s'assurer que les conséquences sur l'infrastructure municipale sont prises en considération lors de la prise de décisions.

Le programme s'appuie fondamentalement sur un cadre qui veille à ce que la Ville vise les bons investissements dans le renouvellement de son infrastructure et les fasse au moment opportun. Pour atteindre cet objectif, le rapport recommande au Conseil d'adopter de nouveaux niveaux de services permettant de tenir compte des risques dans les décisions relatives aux investissements. Cela signifie que la fréquence des travaux entraînant moins de risques pour les services, comme le rechargement des routes locales, sera moindre, tandis que celle des travaux plus risqués pour les services, comme le renouvellement des principales autoroutes, sera plus élevée. Cette recommandation vise à obtenir le meilleur rapport qualité-prix possible en dirigeant le financement là où il est le plus nécessaire.

Le rapport recommande aussi l'adoption d'une politique du Conseil qui fera en sorte que la Ville investira à la hauteur requise et appliquera les pratiques nécessaires pour maintenir le bon fonctionnement de son infrastructure. Ce niveau de financement sera supérieur au niveau de financement pour le renouvellement de l'infrastructure soutenu dans le passé, mais les niveaux recommandés sont nécessaires pour s'assurer de fournir des services de qualité et sur une base abordable aux résidents.

Suivant l'approbation du Conseil de ce niveau de financement, le personnel l'intégrera au prochain Plan de financement à long terme des services soutenus par les impôts.

BACKGROUND

The City owns more than \$32 billion in physical assets (based on replacement value), such as roads, sidewalks, bridges, the Transitway, railways, watermains, sewers, stormwater ponds, pumping stations, reservoirs, treatment plants, waste management facilities, fleet, IT systems, buildings, parks, housing, art and trees. These assets exist to support the delivery of services to the citizens of Ottawa that are fundamental to our quality of life. On average, the replacement value of these assets represents approximately \$35,000 per resident or almost \$90,000 per dwelling for which municipal taxes, water/sewer rates and transit fares are the primary sources of funding for maintenance and renewal.



To fulfill its obligation to deliver quality services to the community, the City must ensure that assets supporting City services are managed in a way that balances service levels, risk and affordability.

The importance of assets used to support these services and the significant budget implications associated with maintaining and renewing this infrastructure means how these assets are managed needs to be an integral part of the City's long-term planning and service delivery model. In the past, infrastructure investments were focused on addressing the funding needs required to support growth. The infrastructure built as a result of the significant growth that has taken place since the 1950s is reaching a stage where significant investments are needed to renew the assets that supported and serviced this growth. This is creating a need to rebalance capital investments between growth and renewal of existing infrastructure assets.

Many of the City's physical assets have long useful life spans, some lasting several decades. The benefit of this is that there is time to react, which gives flexibility to how they are managed. The associated risk, however, is that there is a tendency to postpone needed investments in order to contain budget and tax pressures. Unlike operational investments (for example changes to the snow clearing budget), the impacts of capital investment decisions are not always immediate and, instead, occur over a much longer period of time at a slower rate. Still, unless there is a sound strategy in place, the situation can pass a tipping point where risks and the cost to mitigate them become unmanageable. Therefore, the objective of the proposed asset management program and policy being put forth for Council consideration in this report is to apply "the right intervention, on the right asset, at the right time" in a manner that considers affordability and risk.

When it comes to the challenge of ensuring adequate investment levels to manage our infrastructure assets, Ottawa is not alone, as many Canadian cities are struggling to find adequate funding for infrastructure renewal too. Competing pressures for limited financial resources has challenged cities' abilities to direct consistent levels of funding to support infrastructure renewal needs.

Fortunately, infrastructure renewal needs have become a serious focus of the public and governments, and efforts are being made by all levels of government to address this challenge. At the City, the Infrastructure Levy (2008-2010), Economic Stimulus Program (2009-2011), Ottawa on the Move (2012-2014), Long Range Financial Plan for Transit (2011), and Water and Sewer Rate funding plan (2012) are steps supporting increased infrastructure investments. At the Provincial and Federal levels, the Gas Tax program, Building Canada Fund, Economic Stimulus Program, Ottawa River Action Plan funding and Community Infrastructure Investment Fund (2013-2014) have demonstrated the desire by other levels of government to be involved in the solution recognizing that municipalities alone cannot solve our infrastructure challenges.

Municipal taxes account for 8% of the municipal-provincial-federal tax revenues, yet municipalities are responsible for approximately 60% of Canada's infrastructure (source: FCM). The Province recently announced its *Building Together: Municipal Infrastructure Strategy* intended to be a long-term, cooperative effort beginning with the new Municipal Infrastructure Investment Initiative (MIII). A cornerstone of the strategy and MIII funding is a new requirement for long-term asset management planning by municipalities. Municipalities seeking provincial capital funding will now be required to submit a detailed asset management plan. The program outlined in this report and supporting documents will meet this requirement. From a Federal perspective, in Budget 2011 and Economic Action Plan 2012, the Government of Canada has committed to working with partners and stakeholders to develop a long-term plan for public infrastructure that extends beyond the expiry of the Building Canada Fund in 2014.

City of Ottawa Council has also identified investing in infrastructure as priority. Of note, the development of a Comprehensive Asset Management (CAM) program was adopted as a 2011-2014 Term of Council priority. The purpose of this report is to outline the steps being put in place to allow the City to fulfil this priority and to be well positioned to respond to upcoming funding opportunities from other levels of government. It also provides Council and the public with information on the state of the City's physical assets and what can be achieved in terms of level of service based on available funding.

DISCUSSION

The Current State

Proactive management of the City's assets is not new. The City has been doing it for many years and continues to improve and refine its practices. For example, in 2003 the City adopted an asset management strategy to direct basic renewal needs. The intent of the CAM program is to move to an advanced state of asset management practice, and

adoption of this program will place the City among other leading governments in the UK, New Zealand, Australia and in Canada, namely Edmonton, Calgary, Regina and Hamilton.

In order to develop the program and to help determine what the right investments are, a baseline condition review of all the City's assets was conducted. This was the City's first comprehensive look at the state of the City's physical assets. This was done using a grading system that ranked each asset from very good to very poor. This approach provides an ability to view, at a high level, the condition across different assets and services. Table 1 provides a summary of the state of the City's assets and additional details are contained in Document 1. This first State of the Asset Report (SOAR) focuses on the physical condition of the City's assets as this is deemed to be the most critical element of ensuring safety and good service. The intent is to refine the information (to include other assets as noted in Table 1) and expand the reporting to include asset performance (capacity and functionality) in future updates. Over time, the intent is to refresh the SOAR at the same time an update is made to the Long Range Financial Plans.

Table 1 – Summary State of the Asset Report (Infrastructure Report Card)

Service	2012 Status				
	Asset Replacement Value	Overall Average Asset Condition Rating	% of Assets in Poor to Very Poor Condition	% of Assets in Fair Condition	% of Assets in Good to Very Good Condition
Water	\$ 6,638 M	Good	13 %	28 %	59 %
Wastewater	\$ 5,678 M	Good-Fair	13 %	28 %	60 %
Stormwater	\$ 4,653 M	Good-Fair	6 %	21 %	74 %
Transit	\$ 1,406 M	Good-Fair	7 %	15 %	79 %
Transportation	\$ 11,179 M	Fair	25 %	54 %	21 %
Recreation and Culture	\$ 1,970 M	Fair	17 %	43 %	40 %
Libraries	\$ 94 M	Good	12 %	41 %	47 %
Community Services	\$ 176 M	Good-Fair	0 %	57 %	43 %
Fire, Paramedic and By-Law	\$ 313 M	Good-Fair	9 %	46 %	45 %
Civic Facilities and Realty	\$ 257 M	Fair	1 %	94 %	5 %
Overall Summary	\$ 32,364 M	Fair-Good	16 % (\$5.2B)	37 % (\$12.0B)	47 % (\$15.2B)
Very Good - Fit for the future. Well maintained, good condition, new or recently rehabilitated.					
Good - Adequate for now. Acceptable, generally approaching mid stage of expected service life					
Fair - Requires attention. Signs of deterioration, some elements exhibit deficiencies.					
Poor - At risk of affecting service. Approaching end of service life, condition below standard, large portion of system exhibits significant deterioration.					
Very Poor - Unfit for sustained service. Beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable.					

Overall, the City's assets are safe and are not in a state of disrepair, but for many of these assets their condition is gradually deteriorating and significant investments, beyond previous levels, are required to sustain them into the future. This is demonstrated by the value of assets requiring attention (those in fair and poor-very poor condition). The degree of attention is a function of the actual condition and risk exposure of the assets, and can range from minor maintenance to more costly renewal or replacement.

Figures 1a, 1b and 1c are intended to provide context to the condition ratings for tax supported assets, such as roads, bridges, buildings and parks. The condition ratings represent a consistent method of reporting on the physical condition of various classes of assets. These are derived using best available information, including technical assessments using recognized industry practices and supplemented by subject matter expert input.

Figure 1a – Representation of Condition Ratings for Roads

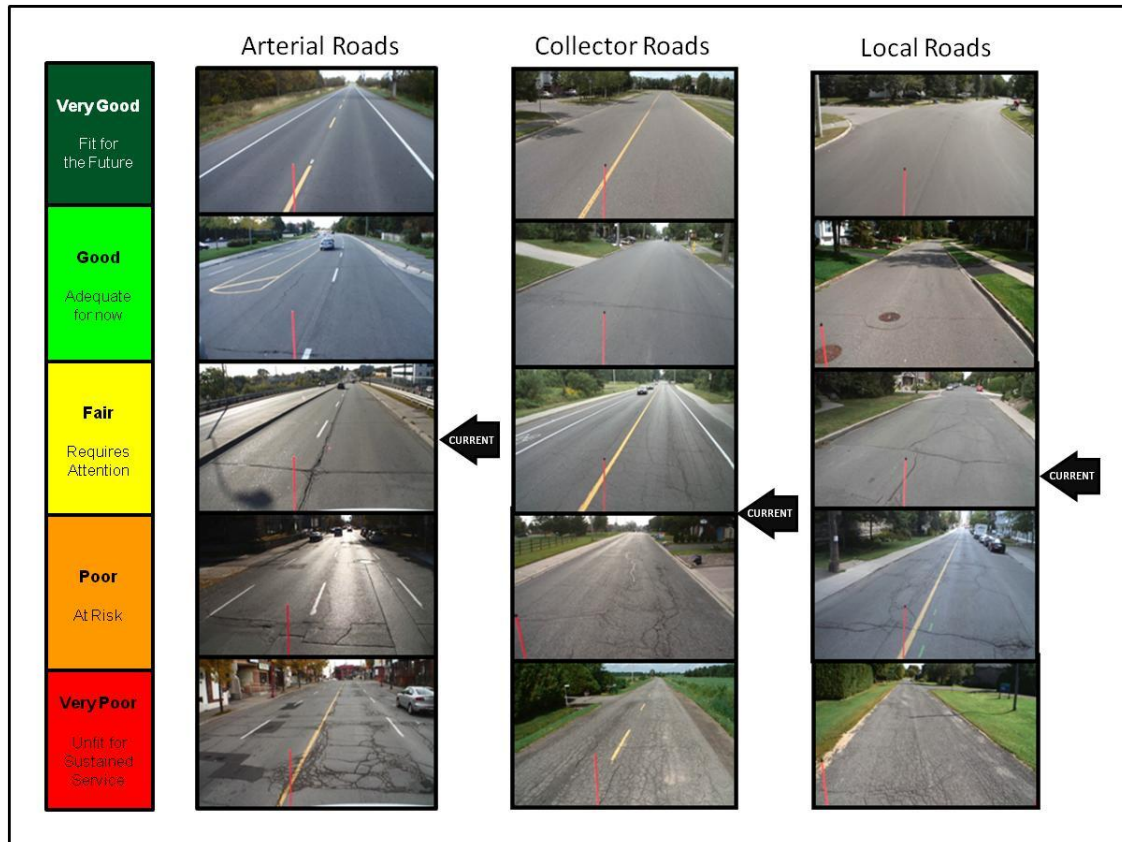


Figure 1b – Representation of Condition Ratings for Bridges and Large Culverts

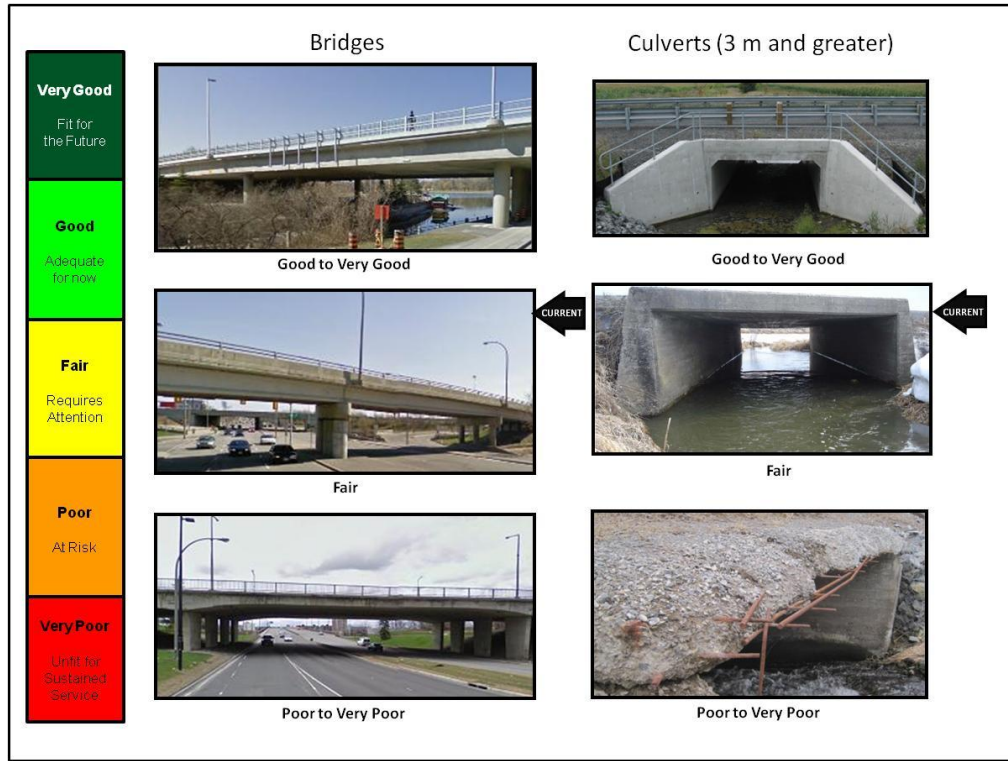
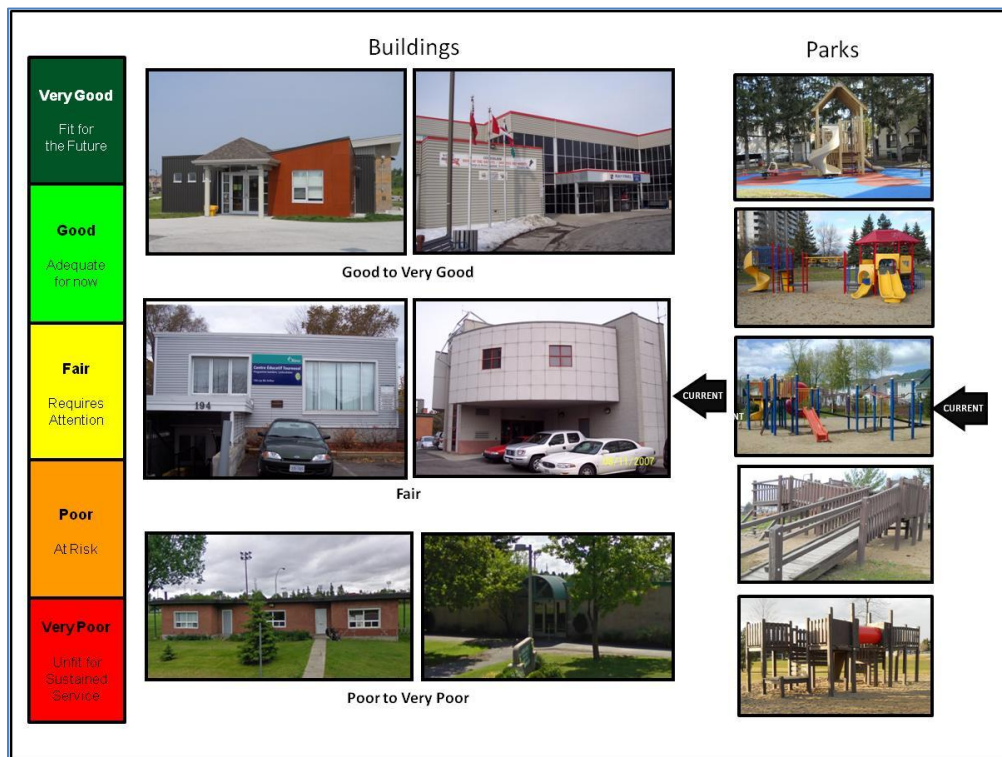


Figure 1c – Representation of Condition Ratings for Buildings and Parks



As observed, not all assets are in good or very good condition and there is a distribution of assets across all condition ratings. It is important to note that this is consistent with a sound asset management approach because it is unrealistic and exceedingly expensive to keep all assets in good or very good condition. The challenge is ensuring that assets in poor or very poor condition get the attention they need and are not left to deteriorate to the point where they begin to have significant adverse impacts on levels of service provided to the public, and, therefore, the quality of life the citizens of Ottawa enjoy. To avoid this, the proposed policy relies on a risk management approach looking at likelihood and consequence of failure when assessing the condition of the City's infrastructure. This will help direct investments to those assets that pose the highest risk to service. This approach will also result in investments in assets that are in fair condition as this ensures optimum extension of life at the best value for the community.

As mentioned earlier in this report, the City of Ottawa is not alone in the need to boost infrastructure renewal investment levels. The Federation of Canadian Municipalities (FCM) through a collaborative effort sponsored by three other national organizations – Canadian Public Works Association (CPWA), Canadian Construction Association (CCA) and Canadian Society for Civil Engineering (CSCE) recently released a *Canadian Infrastructure Report Card (CIRC)* intended to provide information on the state of Canada's road, water, wastewater and stormwater infrastructure. The report card provides a snap shot of the state of Canada's core infrastructure and speaks to the state of the asset management practice across the country. (See Document 4 for more information.)

A summary of the CIRC and Ottawa's results is shown in Table 2. Ottawa's results are generally consistent with the national results, although the City's report card is based on a more comprehensive assessment. In general, both report cards show our infrastructure is not in a state of disrepair and we are not in an immediate crisis; however, we need to pay close attention to the wave of infrastructure needs that lie ahead. Our assets are growing and aging, and are competing for significant funding for upkeep and renewal. With municipalities being responsible for 60% of the value of public infrastructure while receiving only 8% of the overall tax revenue, the CIRC highlights the risk of the condition of these assets on the Canadian economy and the need to improve asset management practices to better manage these essential public assets. That is where the City sets itself apart from many Canadian municipalities by having advanced asset management practices already in place that will better position it to face the growing infrastructure challenges.

Table 2 – Comparison of Canadian and Ottawa Report Card Results

Service	Canadian Infrastructure Report Card	Ottawa Infrastructure Report Card	Comment
Roads ¹	Fair	Fair	Both report cards show that road related assets are in greatest need of attention. These assets are deteriorating and increased investments are needed to reduce the risk of service impacts.

Service	Canadian Infrastructure Report Card	Ottawa Infrastructure Report Card	Comment
Drinking Water	Good	Good	Both report cards show comparable results. Even with an overall good rating, significant ongoing investments are required to address assets that are in poor to very poor condition.
Wastewater	Good	Good-Fair	Both report cards show comparable results, with Ottawa showing a slight drop compared to the national perspective. This is largely attributed to the fact Ottawa has a network of older combined sewers that is typically present in older Canadian cities. Even with an overall good rating, significant ongoing investments are required to address assets that are in poor to very poor condition.
Stormwater	Very Good	Good-Fair	The Canadian report shows more favourable results when compared to the Ottawa report. For context, it was the smallest category studied in the Canadian report and does not come as a surprise since stormwater assets tend to be newer when compared to the other assets considered. In terms of degree of confidence in the results, the Ottawa report is based on a more comprehensive assessment.

1. The CIRG only reported on roads, not including bridges and structures.

Comprehensive Asset Management Policy

An important element in managing the City's infrastructure assets is an ability to link the City's goals and objectives with how assets are managed on day-to-day basis. The intent of the Comprehensive Asset Management (CAM) Policy is to communicate Council's expectations around the management of the City's physical assets.

The objectives of the CAM Policy (Document 2) include:

- Establish and maintain agreed upon levels of service;
- Improve accountability and transparency with respect to decision-making;
- Better demonstration of long-term impacts of short-term decisions;
- Improve customer service;
- Reduce life cycle costs while maintaining agreed upon levels of service; and
- Link infrastructure investment decisions to service outcomes.

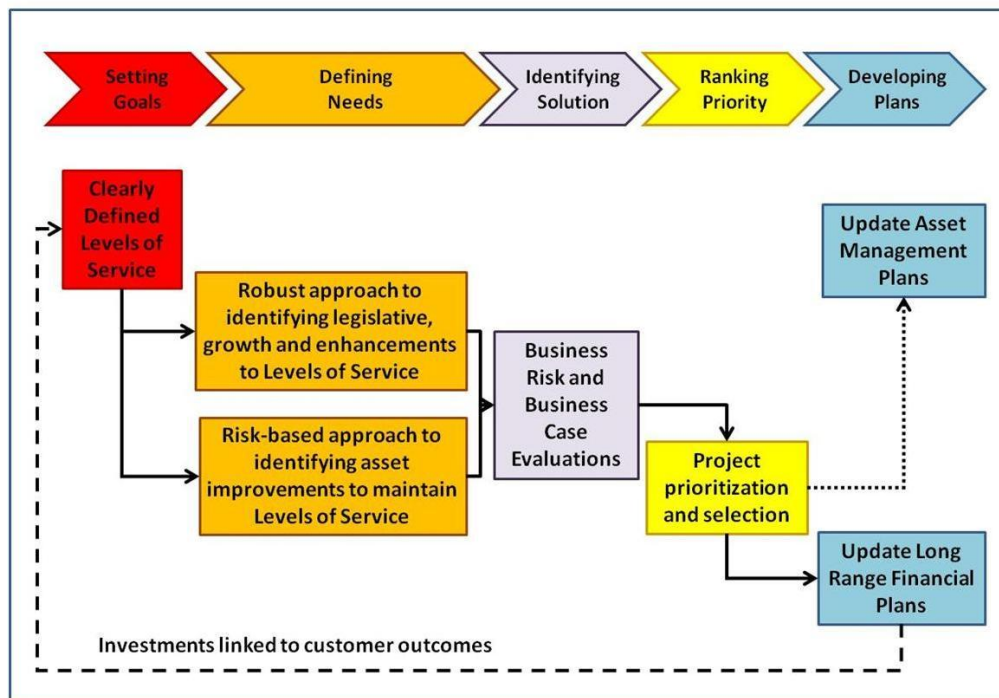
These objectives are achieved through the application of a number of policy statements, including:

- Customer Focused – Having clearly defined customer service levels;
- Service Focused – Considering all the assets needed to deliver a service to customers;
- Value-Based/Affordability – Decisions based on balancing service levels, risks, and costs;
- Forward Looking – Making decisions and provisions to better enable assets to meet future challenges;
- Risk-Based – Safeguarding public health and safety, protecting the environment, and preserving the assets;
- Holistic – A comprehensive approach that considers the combined impact of managing all aspects of the asset life cycle;
- Systematic – Adopting a formal, consistent and repeatable approach; and
- Innovative – Continually improving how assets are managed by taking advantage of new technology.

The CAM Policy also defines several policy directions that provide evidence of Senior Management’s commitment to achieving policy objectives. A key policy directive is the development of a Comprehensive Asset Management Strategy and this document is available as Document 3 appended to this report.

As previously noted, assets only exist to support the delivery of a service. The extent to which these services are provided is defined through customer levels of service (LOS). These LOS can be defined to meet legislated requirements or to meet the City’s service objectives. As shown in Figure 1, having clearly defined LOS forms the basis for defining needs, establishing priorities and identifying investment requirements.

Figure 2 – Linking Investments and Levels of Service



An established LOS provides the foundation for different business areas to assess the risks to 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 the public and the City. Based on the outcome of this report, staff will continue to document the LOS for the various service areas.

Comprehensive Asset Management Approach

Comprehensive Asset Management (CAM) is an integrated business approach involving planning, finance, human resources, 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. As a business practice, CAM is based on the pillars of sustainability (economic, environmental, social and cultural), integrated risk management, and lifecycle costing.

CAM is based on internationally recognized practices that are being applied by many leading municipalities, such as Calgary, Edmonton, Regina and Hamilton. It 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 effective business processes. These components, supported by the appropriate technologies, provide a robust foundation for efficient service delivery.

In essence, CAM allows the City to define:

- The inventory and value of the assets needed to support the delivery of services;
- The asset condition and expected remaining service life;
- The level of service expectations, and what needs to be done to achieve those levels;
- The interventions required to sustain the asset and when these actions are most appropriate;
- The cost to operate, maintain and renew while maintaining assets in safe condition; and
- The investment levels necessary to ensure long-term affordability.

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. A CAM approach aligns well with this need as it supplements the CPF to better inform the strategic objectives of the City, other key business systems, legislation and regulations. It also creates a framework that establishes the mechanism for a clear "line of sight" between how assets are managed and corporate objectives.

Table 3 provides a summary and the status of key strategic documents that form part of the City's overall CAM approach.

Table 3 – Status of Key Comprehensive Asset Management Documents

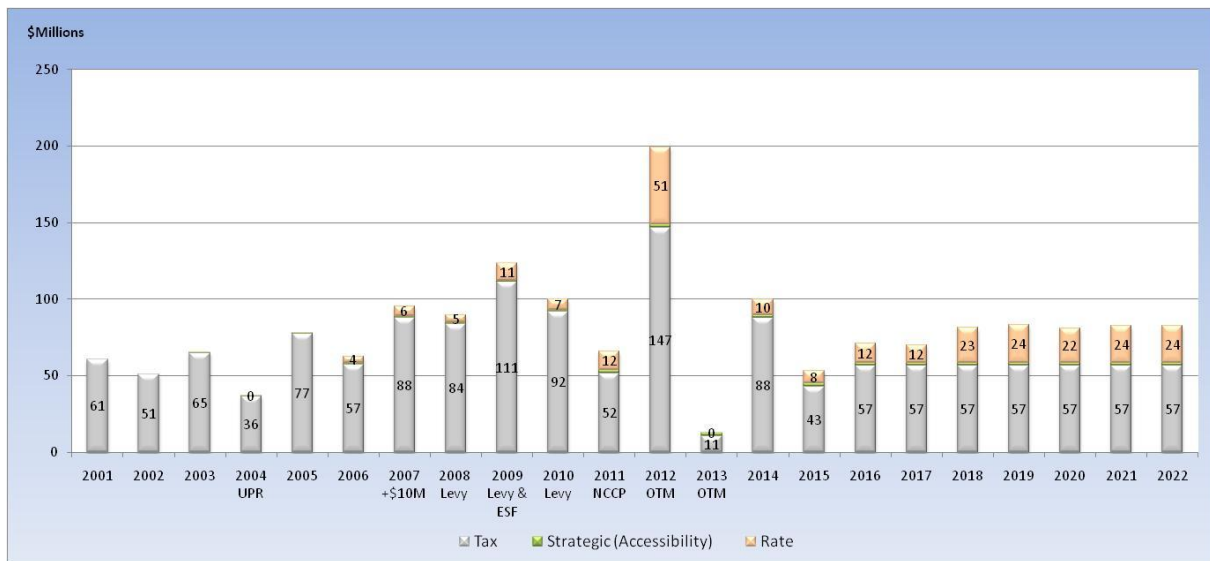
Document	Description	Status
Comprehensive Asset Management (CAM) Policy	This document establishes Council's expectations around the management of the City's physical assets. It is to be approved by Council.	Council approval being considered as part of this report. Refer to Document 2.
Comprehensive Asset Management (CAM) Strategy	This document defines Senior Management's commitment and approach to achieving the Council approved policy. It is to be approved by Senior Management.	Senior Management has approved the principles of this document and will adopt it following Council's approval of the CAM Policy. Refer to Document 3.
Customer Levels of Service (LOS)	These define the level to which assets are to be maintained to achieve defined customer outcomes. These are to be approved by Council.	Under development. To be presented to Council at a future meeting. Direction is subject to the outcome of this report.
Service-Focused Asset Management Plans (AMPs)	These document how assets are to be managed through their lifecycle in support of the delivery of City services. These are to be approved at the Departmental Management level for all service areas.	Many AMPs are in various stages of development at the asset level. The intent is to align these to the specific service areas. A framework has been developed and service-focused Asset Management Plans are to be developed within this Term of Council.
State of the Asset Report (Infrastructure Report Card)	This document provides information on the state of the City's physical assets which can then be referenced when making infrastructure investment decisions as part of the annual budget and long range financial planning processes. It is to be submitted to Council for information.	Summary report included as part of this report. Refer to Document 1.
Long Range Financial Plans (Investment Plans)	These documents define the financial outlook and funding strategies to support the management of the City's assets. These are subject to approval by Council.	Water/Sewer and Transit LRFPs have already been approved by Council. The City-wide tax LRF is being submitted this year.

Linking Investments to Service Outcomes

Previous Long Range Financial Plans (LRFP) have depicted a significant gap between infrastructure investment needs and the City's affordability levels, especially for assets supported by City-wide tax funding (i.e. roads, bridges, buildings, parks). This report provides context to the financial information and provides a link between investment levels and service outcomes. The information in this report, which focuses on tax supported assets, such as road, bridges, buildings and parks, will inform the completion of the update of the Long Range Financial Plan for tax supported funded services. Council has identified the completion of the Long Range Financial Plan (LRFP) for tax supported services as a priority for this year.

Figure 2 provides a summary of the actual investments since 2001 and the currently projected funding plan to 2022 for City-wide tax supported infrastructure assets (roads, bridges, buildings and parks). The dollars for 2001 to 2012 are expressed in the year they are being reported, meaning that they have not been adjusted/reduced to reflect the value in current dollars. The 2013 to 2022 funding levels are expressed in 2012 dollars and are not escalated to account for inflation. For clarity, on this figure there is a rate component. This is to account for the fact that on integrated (road-water-sewer) projects there is a share of the reinstatement of the road that is funded by rate. This is to recognize the fact that the road would not be reconstructed to the same extent if there was not a need to replace water and sewer pipes.

Figure 3 – Historical and Planned Investment Levels for Roads, Bridges, Buildings and Parks (2001-2022)



In the context of managing the City’s infrastructure, as important a factor as setting proper funding levels is the need to focus on taking on only the new infrastructure needed to support smart growth and disposing of existing assets if these can no longer be rationalized. Infrastructure expansion needs to be limited as much as possible because every new asset that is added increases the funding challenges related to managing existing assets. This is because there are costs associated with operating, maintaining, rehabilitating and eventually replacing or disposing of all new assets. Even for assets “donated” as part of new development or paid for with development fees, there are ongoing lifecycle costs to the City. In short, every new piece of infrastructure the City takes on limits the amount of renewal that can be performed on existing assets.

Table 4 and Figure 4 provide a comparison of three different funding levels resulting in different service outcomes. Figure 4 also identifies the current planned funding level as reflected in 2012-2015 capital budget and the 2007 Long Range Financial Plan.

It is recommended that the City adopt as a target a level of investment that would maintain assets in a state of good repair. This is consistent with the levels approved as

part of the Water/Sewer and Transit LRFPs. The minimum level of investment will keep the assets in safe condition, but will not provide a stable level of service in the long term. It is recognized that the recommended funding level represents a significant investment, but there is an opportunity to work with the Provincial and Federal governments as they develop their long term infrastructure plans to support municipalities. The work being done on CAM positions the City well to respond to these opportunities.

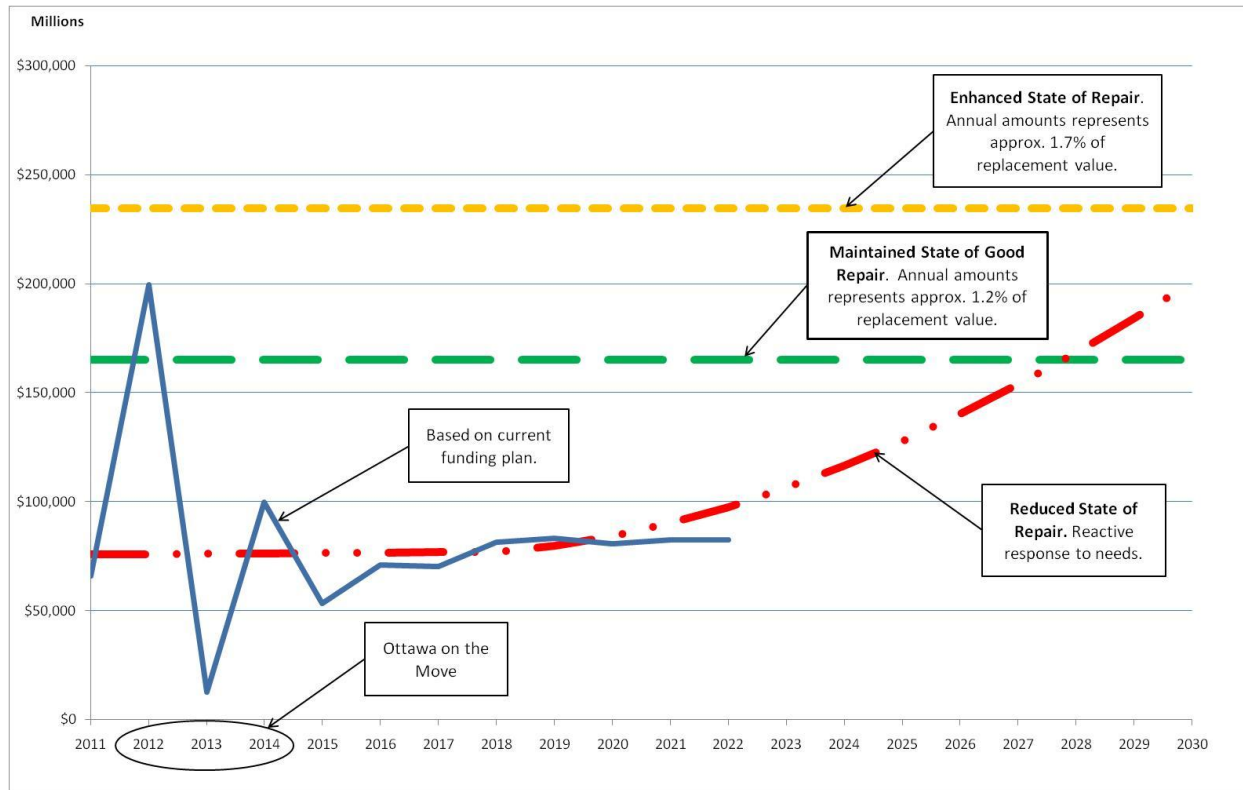
Table 4 – State of Repair Based on Funding Level Options

	Reduced State of Repair (minimum)	Maintained State of Good Repair (recommended)	Enhanced State of Repair (enhanced)
Planning of asset renewal	Maintains assets in a safe condition. Renewal addressed more on a reactive manner given the limited funding.	Maintains assets in a safe condition and provides an ability to be proactive in the planning of renewal needs for assets that pose a higher risk to service.	Maintains asset in a safe condition and provides an ability to be proactive in the planning of renewal needs for all assets.
Impact on service	Unscheduled service interruptions can be expected.	Some service interruptions can be expected, but these would be infrequent.	Service interruptions would be very infrequent.
Sustainability of assets	While focus is on maintaining assets in safe condition, this level of funding would not provide the ability to sustain the assets over their expected service lives in a predictable and sustainable manner.	Assets would remain in safe condition and be sustained over their service lives, although lower risk assets (such as local roads, non-critical building components) would continue to see some level of deterioration before renewal.	Assets would be sustained and enhanced over their service lives.
Implementation of coordinated improvements (pedestrian, cycling, streetscaping)	Given the limited funding there would be little to no opportunity to implement enhancements beyond maintaining existing assets.	Provides an ability to implement some service enhancements as defined in City corporate plans when cost effective to do so.	Provides an ability to implement service enhancements as defined in City corporate plans when additional costs as considered reasonable.
Implementation of accessibility needs at City buildings and parks	Retrofit of accessibility needs would be implemented over a 45+ year period.	Retrofit of accessibility needs would be implemented over a 25+ year period.	Retrofit of accessibility needs would be implemented by 2025 (the timeframe previously suggested in the AODA).

Figure 4 below shows in 2012 dollars the different funding requirements associated with the levels of repair explained in Table 4 above. It is important to note in Figure 4 that if the level of funding is lower than the level required to maintain infrastructure assets in a state of good repair, then over time it will become more expensive to achieve that target. This means that, starting immediately, for every year funding falls below what is recommended, the investment requirements needed to keep the City's assets in good repair will increase.

It is due to this fact that staff are recommending infrastructure renewal for tax supported assets rise from the current planned levels of roughly \$80 million per year as shown in Figure 3 to roughly \$165 million per year within the next 10 years (expressed in 2012 dollars).

Figure 4 – Comparison of Different Funding Levels and Service Outcomes



This is being recommended because, as can be observed, if funding levels remain at a level to achieve minimum standards and a reduced state of repair (red line), which is roughly what the City's current level of funding will achieve, investments will start off in the lower range, roughly \$80 million per year. But because this funding level is not enough to maintain assets over their life cycle, it will become more and more expensive over time just to keep our assets functioning with ever increasing costs to maintain basic safety, roughly \$200 million by 2030 with an ever increasing deficit with respect to asset condition and rising and eventually unaffordable catch up costs after that. Also, during this time, the asset condition would impact service delivery and eventually the costs to maintain safe infrastructure would become prohibitive. For these reasons, this level of service is not recommended.

Funding at levels needed to maintain an enhanced state of repair (roughly \$240 million per year) would allow for most assets to be maintained in a state of good to very good condition and provide the ability for service enhancements on most projects. However, this option doesn't consider the higher costs of upgrading assets with little or no risk of failure, minimal service impact, or the ability to target funding in order to maximize return on taxpayer investment. Instead, it would keep all assets in the same good to

very good condition regardless of the importance of the asset to the overall function of the City and quality of life of citizens. The option is not being recommended as it would require investment beyond the return those investments would provide.

Funding at levels to keep assets maintained in a good level of repair is being recommended because this will allow the City to deliver services safely, result in a sustainable and predictable infrastructure renewal program, allow for assets to be used to their full life cycle, and provide the largest return on investment for the money spent. This funding level will also result in long-term affordability by making targeted investments in a timely manner in order to reduce costs in the future. This level of funding is in the range of \$165 million per year (in 2012 dollars). Reaching this level of infrastructure renewal funding as fast as possible is optimum as it will reduce future costs. However, in recognition of competing priorities, staff are recommending that this level of funding be achieved within 10 years and that it be indexed annually to account for construction inflation. Analysis shows that if this funding level is achieved within 10 years, the City’s ability to close the gap and manage assets effectively will not be compromised.

As noted earlier, this approach is also consistent with the level approved by Council as part of the Water/Sewer and Transit LRFPs. How this level of funding will be achieved will be presented when staff bring forward an updated Long-Term Financial Plan for tax-supported services.

Tables 5, 6 and 7 (below) are intended to demonstrate what service outcomes can be achieved based on the current funding plan compared to the recommended funding plan. Given the recommended funding plan is expected to be phased over a 10-year period, the associated service outcomes would also be achieved in an incremental manner.

Table 5 – Service Outcomes for Paved Roads and Sidewalks Based on Current and Recommended Funding Plans to 2022

Asset (Typical Recognized Practice)	Service Outcomes Based on Minimum State of Repair (Current Funding Plan to 2022)	Service Outcomes Based on Maintaining Assets in State of Good Repair (Recommended Funding Plan to 2022)
Ottawa Road 174 Multilane section (12 to 15 year cycle)	Resurfaced approximately every 15 years. In general, road users should experience a road in good to fair condition. Some road sections are likely to receive at least one preservation treatment (i.e. microsurfacing or thin lift asphalt applications) before resurfacing.	Resurfaced approx. every 12-15 years. In general, road users will experience a road in good condition. Some road sections are likely to receive at least one preservation treatment (i.e. microsurfacing or thin lift asphalt applications) before resurfacing.

Asset (Typical Recognized Practice)	Service Outcomes Based on Minimum State of Repair (Current Funding Plan to 2022)	Service Outcomes Based on Maintaining Assets in State of Good Repair (Recommended Funding Plan to 2022)
Arterial Roads (15 to 20 year cycle)	Resurfaced approximately every 20+ years. In general, road users should experience most of the arterials to be in good to fair condition. Roads are likely to receive at least one preservation treatment before resurfacing.	Resurfaced approximately every 15-20 years. In general, road users will experience arterials in good condition. Roads are likely to receive at least one preservation treatment before resurfacing..
Collector Roads (25 to 35 year cycle)	Resurfaced approximately every 40-50 years. In general, road users should experience many of the collectors in fair condition. Users will see more spot repairs and the City will continue to receive increased number of vibration complaints. Some road sections will receive at least one preservation treatment before resurfacing.	Resurfaced approximately every 25-35 years. In general, road users will experience collectors in good to fair condition. Over time, the City will see a reduction in the number of vibration complaints. Some road sections are likely to receive at least one preservation treatment before resurfacing.
Local Roads and Lanes (35 to 50 year cycle)	Resurfaced approximately every 75+ years. In general, road users can expect the local roads to be in poor to very poor condition leading to increased number of complaints on road condition. Residents can expect that resurfacing would only take place when condition becomes a safety concern, the underground infrastructure is renewed, or when the road can no longer be effectively maintained.	Resurfaced approximately every 50 years. In general, road users can expect roads to be in poor condition leading to some complaints on road condition. Consideration would be given to alternative cost effective renewal strategies (i.e. thin lift treatments instead of traditional mill and pave) until roads are reconstructed to address underground infrastructure needs.
Gravel Roads (upgrading to hard surface)	Funding allows for limited opportunities to upgrade gravel roads to address the highest operational safety needs.	Funding allows for additional opportunities to upgrade gravel roads to address operational improvements both in terms of safety and operational efficiencies.
Sidewalks (40 to 50 year cycle)	Sidewalks reconstructed every 75+ years. In general, users can expect attention to be directed to sidewalks with higher pedestrian volumes. The overall condition of sidewalks is expected to deteriorate. More spot repairs can be expected to address safety issues until these are replaced as part of road reconstruction projects.	Sidewalks reconstructed every 60+ years. In general, users can expect lower volume sidewalks to see some deterioration and sidewalks with higher pedestrian volumes in safe condition. Funding provides the ability to undertake stand alone sidewalk replacements in addition to those replaced as part of road reconstruction projects.

Table 6 – Service Outcomes for Bridges Based on Current and Recommended Funding Plans to 2022

Asset (Non transit)	Service Outcomes Based on Minimum State of Repair (Current Funding Plan to 2022)	Service Outcomes Based on Maintaining Assets in State of Good Repair (Recommended Funding Plan to 2022)
Bridges, Retaining Walls, Large Culverts, Sign Supports	<p>Deficit between maintaining condition and funding required to address the needs is growing.</p> <p>Safety is maintained. In some cases, full scale rehabilitation projects are moved in the schedule or are phased due to annual budget limitations.</p> <p>This can lead to interim or recurring rehabilitation and repeated traffic disruptions over the long term.</p> <p>In some cases, there are short term closures or restrictions to address safety concerns.</p> <p>Functional changes (addition of cycling, load restriction mitigation) are delayed in their implementation. The number of load posted structures may increase over the long term.</p>	<p>Funding levels are anticipated to help provide some stability to reduce the rate of overall deterioration.</p> <p>Fewer schedule adjustments through reduction of interim or recurring rehabilitation interventions.</p> <p>Overall, provides an ability to reduce the number, frequency and duration of traffic disruptions.</p>

Table 7 – Service Outcomes for Buildings and Parks Based on Current and Recommended Funding Plans to 2022

Asset (Typical Recognized Practice)	Service Outcomes Based on Minimum State of Repair (Current Funding Plan to 2022)	Service Outcomes Based on Maintaining Assets in State of Good Repair (Recommended Funding Plan to 2022)
Fit and Finish (carpet replacement, repainting, retiling, etc)	Very limited opportunities for fit and finish activities as focus is on life safety, structure, mechanical and electrical systems.	Some capacity for fit and finish activities to enhance customer experience where these are deemed to be cost effective. Focus would remain on life safety, structure, mechanical and electrical systems.
Mechanical System Replacement (20 year life)	<p>Funding allows for replacements where systems have typically exceeded their anticipated service lives.</p> <p>Safety is maintained, but unscheduled service interruptions can be expected as systems are extended beyond their anticipated service lives.</p>	<p>Funding allows for replacements where systems are generally within their anticipated service lives..</p> <p>Safety is maintained. Unscheduled service interruptions would be reduced.</p>

Asset (Typical Recognized Practice)	Service Outcomes Based on Minimum State of Repair (Current Funding Plan to 2022)	Service Outcomes Based on Maintaining Assets in State of Good Repair (Recommended Funding Plan to 2022)
Roof Replacement (25 year life meaning 30 per year)	Funding allows for roof repairs with replacements typically well beyond anticipated service lives. Safety is maintained, but unscheduled service interruptions can be expected due to the need to undertake more frequent interim repairs. The longer renewal cycles are also expected to result in more water penetration into the building envelop leading to deterioration of other building components.	Funding allows for roof repairs and replacements generally within anticipated service lives.. Safety is maintained. Frequency of unscheduled service interruptions would be significantly reduced as would be the deterioration of other building components that could be susceptible to water penetration into building envelop.
Accessibility Retrofits (AODA standards under development have identified barriers to be removed by 2025)	Accessibility retrofits apply to both building facilities and parks. Funding allows for barriers to be removed over a 45+ year period, exceeding AODA timelines. Investments focused on removing public accessibility barriers.	Accessibility retrofits apply to both building facilities and parks. Funding allows for barriers to be removed over a 25+ year period, exceeding AODA timelines. Investments focused on removing public accessibility barriers, including more capacity to make parks and playgrounds more accessible.
Park Pathways, Lighting, Wading Pools, Parking Lots.	Funding allows for minimal maintenance and repairs focused on safety. Users can expect more spot repairs and lower priority items related to fencing, lighting, water play structures, wading pools, pathways, parking lots and signage are deferred resulting in growing backlog.	Funding allows for maintenance of existing assets at levels that reduce the growing backlog of needs. Safety would be maintained and user experience would be improved.
Play Structures Replacement (a 20 year life requires 30 per year)	Funding allows five to six play structures to be replaced per year. Focus would be on keeping structures safe but there would be a growing number exceeding their anticipated service lives. User experience would be impacted.	Funding allows 25 to 30 play structures to be replaced per year. Safety would be maintained and user experience would be improved.

Investment Prioritization and Value for Money

As you can see in the figures below, deferring maintenance of infrastructure assets has a cost that can present itself in the form of increased future renewal costs or reduced service. Achieving a balance can be challenging since not all assets can be run to the very end of their life cycle, (i.e. bridges, water transmission mains, trunk sewers). A proper asset management approach does not simply mean fixing the “worst first” and

focusing on assets that are in poor to very poor condition. It is about managing the overall portfolio of assets through their lifecycle by applying “the right intervention, at the right time, on the right asset” in a manner that takes affordability and risk into account in the decision making process. In fact, fixing the “worst first” or waiting for assets to reach a state where reconstruction is needed represents the most expensive approach to managing long-lived assets.

The challenge is to manage the upcoming wave of renewal needs in a way that reduces the sudden rise in works required to keep assets safe and functioning, which in turn reduces the risk of service impacts or interruptions. Figures 5a, 5b and 5c show how roads, bridges and buildings deteriorate over time and the renewal strategies that are appropriate based on the condition of the assets. It can be seen that as the assets deteriorate the renewal strategies become more costly. As such, an asset management approach directs more cost effective investments to assets that are in fair condition in order to extend the life of the assets before more costly interventions are required. Pavement preservation strategies (i.e. microsurfacing, thin lift overlays), bridge deck rehabilitation (i.e. membrane replacement and deck resurfacing), building roof preservation (i.e. membrane replacement) represent a few examples of strategies that see maximum benefit for minimum investment.

Figure 5a – Road Renewal Intervention Strategies Based on Condition

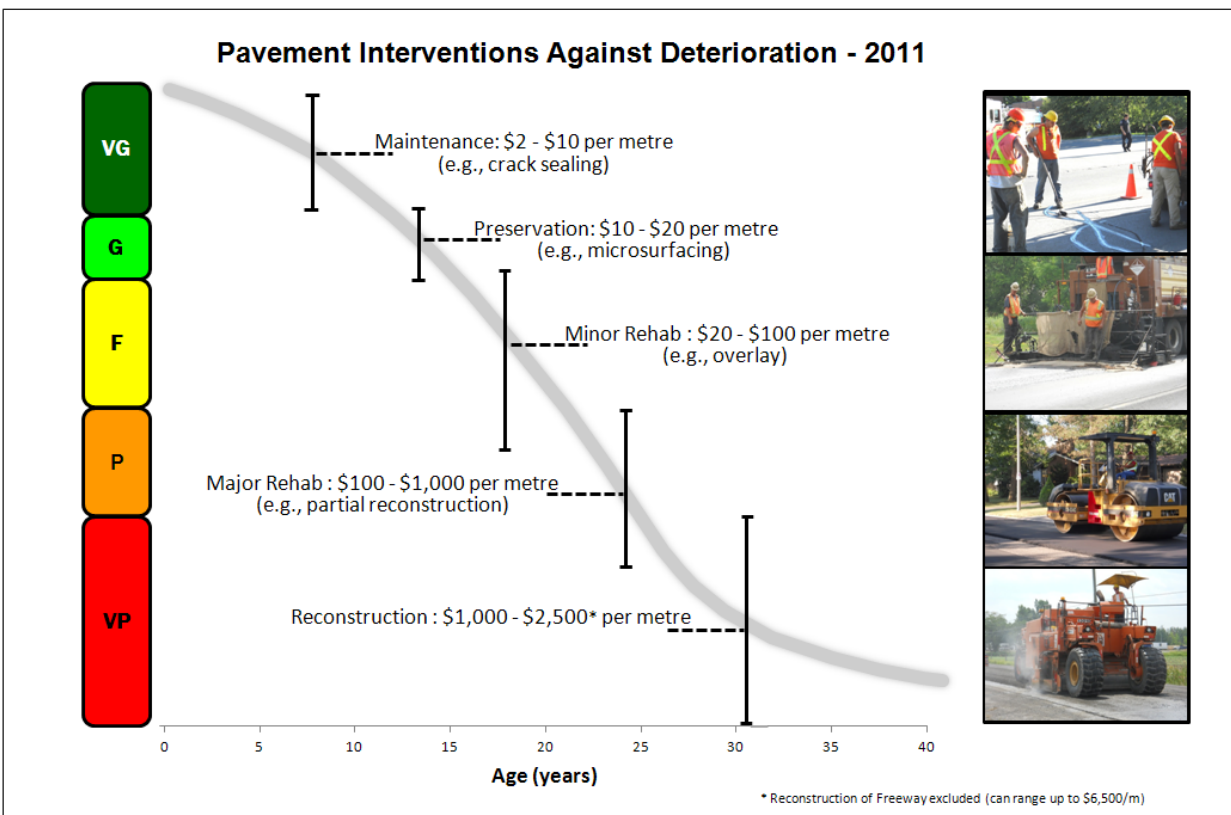


Figure 5b – Bridge Renewal Intervention Strategies Based on Condition

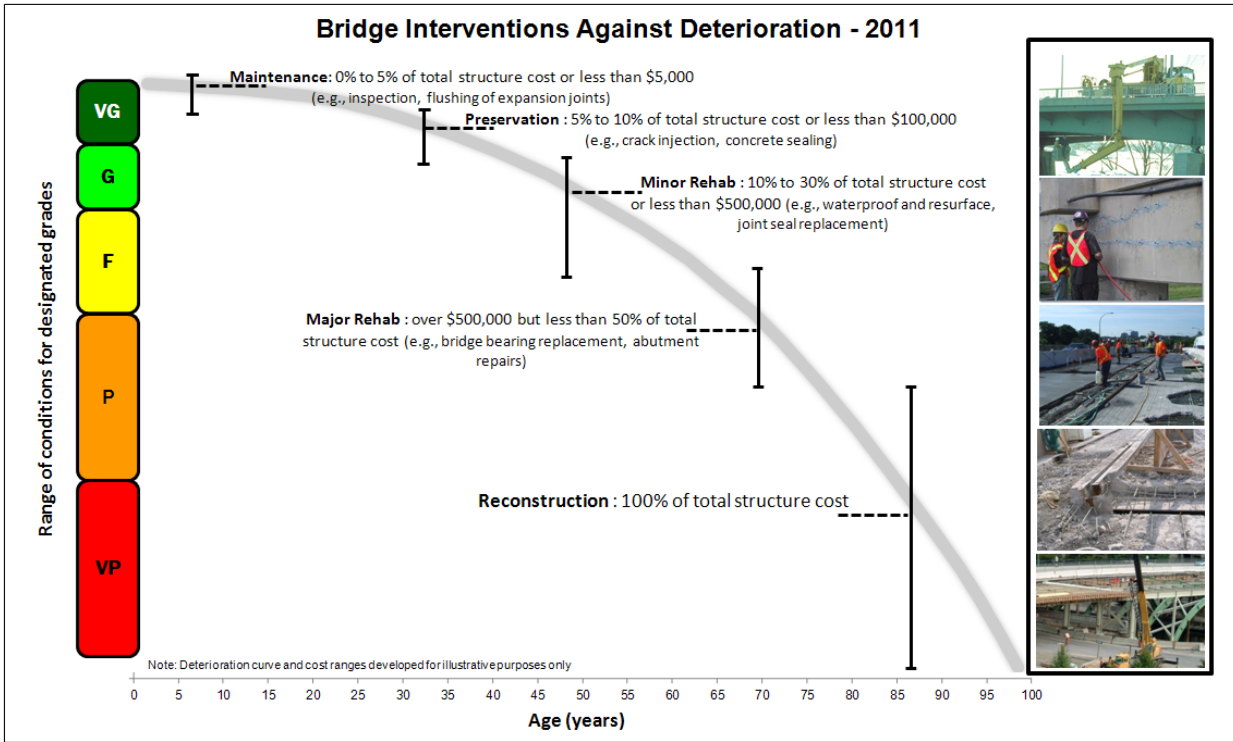
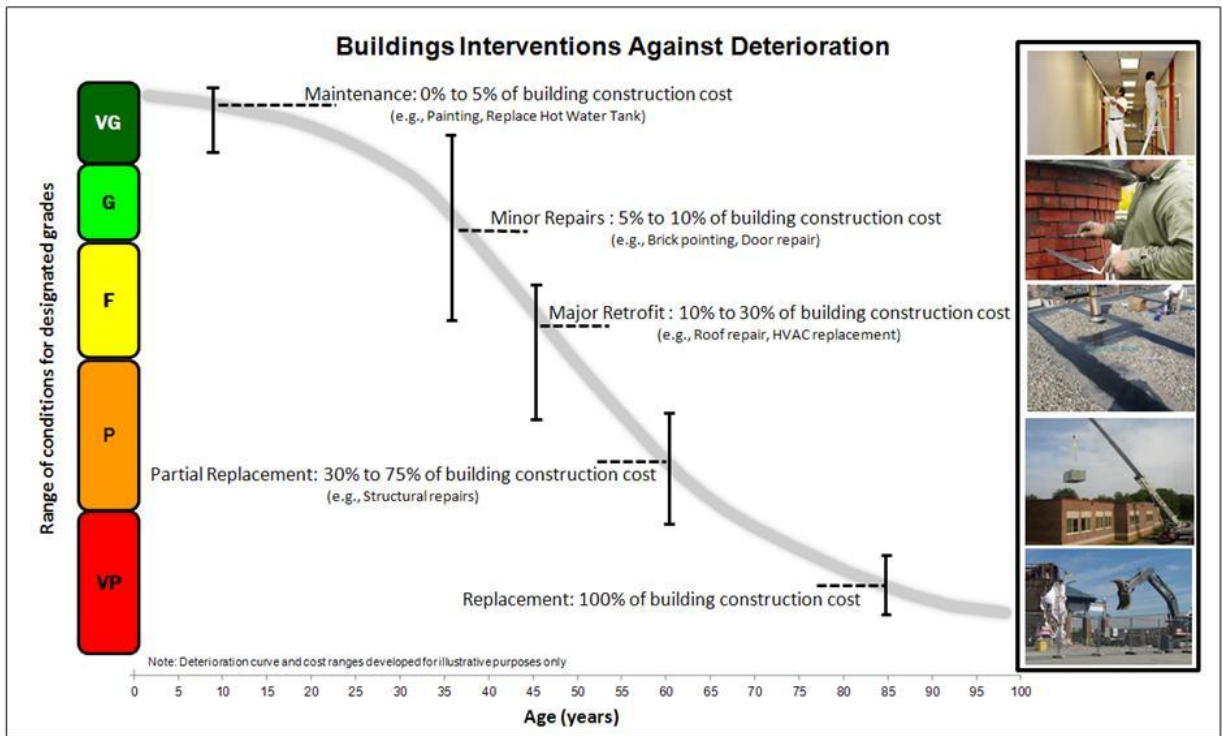


Figure 5c – Building Renewal Intervention Strategies Based on Condition



Summary

Adoption and implementation of a Comprehensive Asset Management Program as outlined in this report is recommended because:

- The City of Ottawa assets are in fair to good condition but they are deteriorating and need increased levels of renewal investment to remain in good repair;
- Comprehensive Asset Management Programs are now industry best practice and are required by upper level governments for funding;
- Investments and attention to infrastructure renewal now will save taxpayers dollars in the long run and maintain the affordability of City services; and
- Public safety and quality service delivery are top municipal responsibilities, and Council has made it a priority to develop a Comprehensive Asset Management Program to address these responsibilities.

RURAL IMPLICATIONS

This report applies to City-wide assets. Roads, bridges and buildings are important assets serving the City's rural area.

CONSULTATION

All City Departments that rely on physical infrastructure assets have been consulted in the development of this report.

COMMENTS BY THE WARD COUNCILLORS

This is a City-wide report – not applicable.

LEGAL IMPLICATIONS

Due to time constraints, a legal opinion on this report will be available on October 2, 2012.

RISK MANAGEMENT IMPLICATIONS

There are risk implications in managing physical assets. The Comprehensive Asset Management Program focuses on a risk-based approach to managing infrastructure investments with higher attention directed towards assets that pose the greatest risk to service.

FINANCIAL IMPLICATIONS

Council has identified the completion of the Long Range Financial Plan (LRFP) for tax supported services as a priority for this year. The LRFP report will identify the funding strategies that can be put in place to provide for the renewal and maintenance of the City's existing asset base to keep them in a state of good repair, as discussed in the report: "Comprehensive Asset Management Program".

ACCESSIBILITY IMPACTS

The Accessibility for Ontarians with Disabilities Act (AODA) was passed in 2005 with the goal to make Ontario accessible for people with disabilities by 2025. The cost to remove all barriers at City buildings and parks is estimated to be in the order of \$150M. To achieve the 2025 timeline would require annual investments exceeding \$10M.

The recommended funding plan attempts to strike a balance between maintaining assets in a state of good repair and the removal of barriers. Specifically the recommended plan allocates almost \$7M annual for barrier removal and this in addition to barriers removed as part of building renewal or retrofit projects.

Accessibility audits are ongoing. At this point approximately 60% of City buildings have been audited. It is recommended that investments towards barrier removals be monitored so that any adjustments can be reflected in future long range financial plan updates.

ENVIRONMENTAL IMPLICATIONS

There are no environmental implications associated with this report.

TECHNOLOGY IMPLICATIONS

Information Technology Services has been working closely with Infrastructure Services to develop a detailed work plan for technology initiatives that may be required to support this new program. This work plan and business case(s) where required, would be evaluated and approved through the City of Ottawa ITS intake process for all new technology requests.

TERM OF COUNCIL PRIORITIES

This report is consistent with the 2011-2014 Term of Council priority for Planning and Decision Making. The development of a Comprehensive Asset Management Program is identified as a term of Council priority.

SUPPORTING DOCUMENTATION

- Document 1 Comprehensive Asset Management Program, 2012 State of the Asset Report (Draft to be finalized to reflect Council approval of funding plan)
- Document 2 Comprehensive Asset Management Policy
- Document 3 Comprehensive Asset Management Strategy
- Document 4 Canadian Infrastructure Report Card

DISPOSITION

The Infrastructure Services Department will apply renewal strategies based on funding levels approved by Council. The Department will continue to document level of service outcomes that can be expected by the public based on the funding level projections that are approved by Council as part of the Long Range Financial Plan. The Department will also continue to seek ways of delivering renewal projects in the most cost effective manner.