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# ***Capital Planning and Budgeting, Life Cycle Costs and Operating Costs***

SPCF on Finance: May 29, 2017

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### ***Limitations and Responsibilities***

*This report was prepared by PwC at the request of City of Saskatoon and is intended solely for the information of City of Saskatoon management and the Standing Policy Committee on Finance of the City Council. The material in it reflects PwC's best judgment in light of the information available at the time of preparation. This report has been prepared for and only for City of Saskatoon pursuant to our Statement of Work and for no other purpose. The existence of this report may not be disclosed nor its contents published in any way without PwC's written approval in each specific instance. PwC does not accept or assume any liability or duty of care for any other purpose or to any other person to whom this report is shown or into whose hands it may come save where expressly agreed by our prior consent in writing. Our work was limited to the specific procedures and analysis described herein and was based on the information made available through December 23, 2016. Our findings are based on the information provided and the data collected during this engagement.*

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## *Executive Summary*

The City of Saskatoon (the City) currently has an asset management framework in place with their existing strategy document but lacks a formal overarching, fundamental principles-based policy in place above the stated strategy. The theme of this report and the framework it follows is to guide the City in building on the asset management foundation it has developed by further developing a principles and policy based approach to asset management that tightly links the principles and policies to the master Asset Management Plan (AMP), individual AMP's, and the capital and operating budgets. The City is not behind the times with its asset management strategy, as it is primarily in the last 5 years that formal asset management planning has come to the forefront across Canada – some of the municipalities referenced in this report have also made significant strides in their asset management planning in the last year or two only.

With the work that has been done in 2016 by Administration, some of the pieces are in place to move forward on asset management planning, however further refinement and formality is required to ensure that there is a close correlation between asset management planning and capital and operating budgeting. To be clear, the contents of this report apply equally to the existing asset base of the City that is included in existing AMP's, as well as future additions to the asset base approved through the capital budget cycle.

With multi-year budgeting potentially coming into place in the near future, the importance of making strides in asset management planning (particularly with respect to connecting life cycle costs and operating impacts between the asset management plans and the capital and operating budgets) over the next 2 to 3 years is important. As part of the multi-year budgeting initiative, improvement will be necessary to closely tie capital expenditure planning to operational planning to understand short-term and long-term operating expense impacts. The evolution towards multi-year budgeting has significant ramifications on the areas discussed within this report and there is synchronicity between the multi-year budgeting journey and further refining the City's asset management planning.

This report is structured as a framework to assist the City in advancing from its current state to a more mature and advanced asset management framework that incorporates long-term financial planning and is directly linked to the capital and operating budgeting process. Within each area, Internal Audit (IA) has made observations based on the current state at the City, comparisons to existing leading practices across Canadian municipalities and recommendations for Administration to consider. Note that IA selected comparative municipalities who had made significant progress in their capital asset management, and generally had mature policies and an overall framework in place (i.e. 3 to 5 plus years).

- Section 3: Asset Management and Capital Planning Policies – IA discusses the need for overarching policies incorporating formal decision-making criteria and the need for incorporation of multiple-scenario life cycle costs into asset management plans.
- Section 4: Direction of Capital Asset Management – IA discusses the need for formal criteria to be developed to set out the roles and responsibilities that the Asset and Financial Management team at the City will have in ongoing asset management compared to the roles and responsibilities of the individual divisions.
- Section 5: Determine Impact of Capital Budgets on Operating Budgets including Life Cycle Costs - IA discusses the need for rigid enforcement of policy with respect to capital project submissions, particularly with respect to the inclusion of operating impacts and life cycle cost as well as increased transparency of reporting of operating impacts and life cycle costs in budgets.

- Section 6: Multi-Year Capital Planning – IA discusses synchronization of multi-year budget initiatives and multi-year capital planning process;
- Section 7: Present, Monitor and Report on Budgets and Projects - IA provides recommendations which discuss the need for development of performance measures and further refinement of, and reporting on, capital expenditure categories to increase the linkage between the asset management planning taking place and the capital and operating budgets.
- Section 8: Tracking Detailed Information for Maintaining and Replacing Assets – IA discusses the need for the tracking of detailed information as both a last piece to the asset management cycle and also an important first piece to beginning the cycle anew. The journey with the Roadways assets over the last 5 years is used as an illustrative example of asset management arising out of necessity to deal with significant deferred maintenance issues and now needing to mature to a more preventative, forward-looking asset management strategy with more sophistication and complexity.

The City has made significant progress in its asset management journey in 2015 and 2016 with the launch of their individual AMPs. The recommendations resulting from IA's assessment will assist the City in defining, describing and documenting life cycle costs and operating cost impacts, with the objective being an increased ability of Administration and Council to make decisions on capital spending.

## ***1 – Introduction and Background***

### **a) Asset Management Planning**

Over the past number of years, municipalities across Canada have been unable to make all investments necessary to maintain their infrastructure – this issue is by no means unique to the City. Although most municipalities across Canada were facing this challenge, there were (and continue to be in many cases) limited options available to these municipalities in terms of funding this investment. Past decisions to underfund asset maintenance and repair of assets may have been made out of financial necessity, however these decisions resulted in significant deferred maintenance work.

Partly as a result of these challenges, asset management has come to the forefront in the last 5 years, with many municipalities across Canada adopting formal asset management strategies since 2010. There is an ongoing continued focus in this area across the country continuing into 2016 and 2017. One notable example is the Federation of Canadian Municipalities’ “Leadership in Asset Management Program”, which 12 municipalities participated in between 2015 and 2017, working together in the development of asset management policies and strategies. Participating municipalities ranged from small to large and included cities such as Melville, Edmonton, Ottawa, Vancouver and Windsor. Most recently, the City of Waterloo has undertaken the development of a comprehensive corporate asset management plan that required a core project team of 9 managers and directors across the organization in addition to 44 subject matter experts and support staff throughout the organization, as well as external consultants. Additional internal positions were created as a result of the asset management planning exercise and there were funds allocated of over \$1 million for the project.

In 2016, the City launched its first Corporate Asset Management Plan (AMP), a key aspect of which was enabling both Administration and Council to make better informed and balanced decisions. The first steps undertaken with the Corporate AMP were to develop individual AMP’s for eight major asset categories. The individual plans focus on what the City owns and the worth thereof, the current condition assessment, the desired condition, and the funding required to reach the desired condition. At the conclusion of those individual AMP’s, the City’s goal is to develop a master AMP that encompasses all assets that the City owns. This master AMP will be crucial as it will also allow for the City to adopt formal asset management and capital planning policies, which are currently not formally in place, to guide the recommended spending coming out of the AMP.

Asset management planning is a crucial aspect of this project as it feeds directly into the capital and operating budget process in terms of life cycle costs and operating cost impacts. Capturing those life cycle costs and operating cost impacts internally is critical to both the AMP process and the budgeting process, and incorporating those costs transparently into the capital and operating budget is of equal importance.

### **b) Capital and Operating Budgeting**

The City’s budgeting process is guided by Council Policy C03-001: The Budget Process. With respect to capital projects, C03-001 3.4 outlines the relevant guidelines which drive the City’s capital planning and budgeting, which is the focus of this IA project. More specifically, in C03-001 3.4 b) iii), it states that for the estimation of project costs, for each capital project it “should indicate what impact the project will have on the operating budget (i.e. cost to operate and maintain the capital asset)”. The inclusion of both “operate and maintain” is key as the cost to operate an asset would be the impact of that capital project on the annual operating budget going-forward, while the cost of maintaining the capital asset would be the life cycle costs associated with that capital project over its life, which in most cases will be a combination of operating and capital expenditures.

In the 2017 Approved Operating & Capital Budget for the City, there was a total approved investment in capital projects of \$261.9 million, including Land Development. The total operating budget impact of capital investments identified in 2017 was a total of \$1.6 million (or 0.6%) over the 2018 to 2020 period, of

which 55% related to operating increases necessary for the operational success of the Construction and Demolition Waste Management Centre (i.e. Recovery Park). Excluding Recovery Park, the total operating budget impact of capital investments identified in 2017 was \$0.7 million or 0.3%.

In the 2016 Approved Operating & Capital Budget for the City there was a total approved investment in capital projects of \$228.8 million, including Land Development. The operating impact of capital investments identified in 2016 was a total of \$1.4 million (or 0.6%) throughout the 2017 to 2019 period, almost 2/3 of which related to land development projects. The primary type of operating cost impact identified for the land development projects was increased park maintenance costs for new park developments. Excluding the land development projects, the total operating budget impact of capital investments identified in 2016 was \$0.6 million or 0.3%.

	2017	2016
Capital investment (including land development)	\$261.4 million	\$228.8 million
Operating costs impact (\$)	\$1.6 million	\$1.4 million
Operating costs impact (%)	0.6%	0.6%

Through IA's review of the capital budget, a disclosed operating cost impact of 0.6% (or 0.3% excluding land development projects) appears to be low and does not capture the full operational impact of these capital investments, which are in excess of \$200 million in both 2016 and 2017. This report, particularly Section 5, will highlight this issue and its impacts in further detail and provide related recommendations.

### c) **Life Cycle Costs and Operating Impacts**

Life cycle costs represent the total recurring and one-time/non-recurring costs required to be incurred over the full life span of an asset (i.e. the total cost of ownership or "cradle to grave" costs). The purpose of assessing life cycle costing is to make informed, data-based decisions regarding the most cost-effective options that the City has at its disposal in terms of owning and operating its assets, including maintenance and ultimate replacement. Simple examples would include lease vs. purchase decisions as well as maintenance vs. replacement decisions. Operating impacts in the context of capital budgeting represent a subset of an asset's life cycle costs.

There is an important distinction to be made between the transparency of life cycle costs and operating costs within the capital budgeting process and the degree to which those costs are captured in the underlying information. The primary aims of this project are to a) assess the underlying framework which the City is using to capture life cycle costs and operating cost impacts, including the connection between the asset management plans and the annual budget and b) assess the extent to which those same life cycle costs and operating cost impacts are being transparently captured in those same documents. IA's report will include an analysis of the current state and will also consider leading practices in place both from a theoretical perspective and a practical perspective (i.e. leading practices in place at other Canadian municipalities).

Based on the observations made, IA will bring forward recommendations to Administration that would have a positive impact on both the ability of the City to factor in operating cost impacts and life cycle costs and incorporate those costs transparently into the asset management plans and annual budgets. Note that the project is not intended to be a full analysis of the Asset Management Planning in place at the City of Saskatoon, but includes analysis and comments on that topic relevant to the subjects of operating cost impacts and life cycle costing. The undertaking of comprehensive asset management planning is a multiple-year exercise requiring significant organizational investment and often, the utilization of external resources, and while this report contains some recommendations intended to enhance the City's existing asset management planning documentation, it by no means contains a full analysis of the subject or a full roadmap to implementation of more fulsome asset management planning.

## 2 – Approach and Framework

### a) Approach

IA reviewed existing practices with respect to capital budgeting, operating cost impacts and life cycle costing with relevant contacts from Asset and Financial Management, Transportation and Utilities, and Community Services. IA performed more detailed interviews and walkthroughs to assess the current state of these same areas with relevant representatives from Facilities and Fleet and Major Projects. The relevant source documentation in place for IA to consider while performing these procedures were the existing Corporate AMP, the drafted and published individual AMP's, and leading practices in place in relevant literature and at other Canadian municipalities.

### b) Framework

IA's examination of current practices and analysis of applicable leading practices to be incorporated at the City is performed in light of a framework. The framework provides a clear lens from which to view the City's overall asset management and budgeting practices from the top-down, with the concept being that if fundamental areas are omitted from the first and highest stages of the process, the ability to properly capture and transparently report operating cost impacts and life cycle costs will be significantly reduced. The ability to successfully implement and practice each area of the framework will assist the City in meeting its asset management goals and in turn providing Administration and City Council with the information needed to make better informed and balanced decisions come budget time, particularly with respect to capital budget items. The framework used to present this report is based on a review by IA of leading theoretical and practical asset management and represents the following areas:





### 3 – Asset Management and Capital Planning Policies

#### a) Developments in the City’s Asset Management Planning in 2016

Asset management and capital planning policies are critical to achieving improved integration and transparency with respect to asset life cycle costing and identification of operating cost impacts. Having such policies in place will ensure consistency in future AMP’s and will allow the City to continue to build on the progress it has made to-date. These policies will assist in further defining and formalizing the work that has been done to-date and can be designed to incorporate recommendations made within this report. Formal capital planning policies assist in demonstrating thorough fiscal management and formal asset management policies set the tone for what is expected of internal stakeholders for all assets currently utilized by the City and any assets that will be acquired and/or constructed in the future. These policies direct capital planning and budgeting and assist in ensuring that all necessary considerations are factored into the capital planning process. Finally, these policies directly assist in the cost-effectiveness of sustaining infrastructure over its life span. The importance of these policies is further highlighted in Section 3b) below (“Policy Fundamentals”).

As noted in Section 1, in 2016 the City launched its first Corporate Asset Management Plan (AMP), a key aspect of which was to enable both Administration and Council to make better informed and balanced decisions. The first steps undertaken with the Corporate AMP were to develop individual AMP’s for eight major asset categories. At the conclusion of those individual AMP’s, the City’s goal is to develop a master AMP that encompasses all assets that the City owns. The individual plans are to focus on what the City owns and the worth thereof, the current condition assessment, the desired condition, and the funding gap required to reach the desired condition.

IA noted that while the City is making progress on its AMP’s and addressing the majority of best practices through the AMP’s currently being developed, key elements missing from the current asset management plans are clear definition, development and reporting of life cycle costs and clear criteria with respect to prioritizing future spending. This aspect of the AMP is critical to enabling Administration and Council to make informed and balanced decisions.

#### **City of Saskatoon AMP Summary**

The table below captures a summary of critical components included in the currently published individual AMPs. Note that all AMP’s were generally consistent in key areas (indicated by the “Y”) aside from the fact that only the published AMP’s for Bridges and Roadways specifically contained detailed information relevant to considering life cycle costs that could potentially be leveraged going forward, in capital and operating budgets and otherwise.

Area of AMP	Worth of Owned Assets	Current Condition**	Expenditure Level Required*	Annual Funding Gap	Desired Condition of Assets**	Sufficient Life Cycle Cost Detail
Transit	Y: \$81.9 million	Y: 11.9 yr. fleet age	Y: Level B	Y:\$6.0 million	Y: 7.0 yr. fleet age	N
Parks	Y: \$85.8 million	Y: Poor to Fair	Y: Level A-C	Y: \$3.0 million	Y: Fair to Good	N
Sidewalks	Y: \$722 million	Y: 84.6 SCI	Y: Level B	Y: \$1.0 million	Y: 85 to 100 SCI	N
Bridges	Y: \$948 million	Y: Varies	Y: Level B	Y: \$4.5 million	Y: Varies	Y
Water & Wastewater	Y: \$6.23 billion	Y: Varies	Y: Level B	Y: \$nil	Y: Varies	N
Roadways	Y: \$2.82 billion	Y: 74.3 PCI	Y: Level B	Y: \$1.1 million	Y: 80 to 85 PCI	Y

\*Level A represents an expenditure level designed to result in an asset condition of “Getting Better Quickly – Sufficient expenditures to keep asset in the condition specified by City Council and to increase asset condition/value quickly over time”. Level B represents “Getting Better – Sufficient expenditures to keep asset in top condition and to increase asset condition/value slowly over time”. Level C represents “Maintain Assets in Current Condition – Sufficient expenditures to keep asset in constant condition over time”.

\*\*SCI and PCI refers to Sidewalk Condition Index and Pavement Condition Index respectively.

Key aspects noted by IA with respect to life cycle costs within each of the AMP’s are as follows:

- Transit – useful information to incorporate with respect to maintenance and life cycle costs would reflect “if the status quo is maintained, what are the annual maintenance and life cycle costs associated with the current fleet based on the actual average age of 11.9 years as compared to the maintenance and life cycle costs associated with the desired average fleet age of 7.0 years”. For example, the City of Ottawa conducted a review of their fleet maintenance costs (for their overall fleet, not just transit) and found that for vehicles exceeding their suggested useful lives, the maintenance costs were 23% to 37% above those costs for vehicles within their suggested useful lives. In that case, it was suggested that maintenance costs for over-age vehicles were 30%, and with an annual fleet maintenance budget of \$12 million the City of Ottawa estimated that it was incurring additional annual maintenance costs of \$1.3 million for over-age vehicles. This same information would be pertinent to decisions to be made at the City of Saskatoon.
- Parks – sufficient information is contained in the AMP regarding the potential plan to address the funding gap and the costs required to do so. Were the plan to include further details on life cycle costs, there would be a clear record of the annual life cycle costs associated with the current infrastructure in its current condition compared to the annual life cycle costs associated with the infrastructure in its desired condition.
- Bridges – information is contained in the AMP regarding the estimated cost of maintenance assuming all structures in new condition, as well as three known large projects anticipated between 2021 and 2025. This is an example of an area where the fundamental life cycle costing information appears to be identified, and the next step is to more clearly and transparently incorporate that information into the capital and operating budget.
- Water & Wastewater – the area represents the highest investment in infrastructure of the AMP’s prepared to-date. There is limited information within the AMP with respect to life cycle costs in order for a user of the AMP to fully understand the life cycle costs associated with the Water & Wastewater infrastructure or to draw a direct connection between those costs and items within the operating and capital budget of the City.
- Roadways – the potential funding required for good condition levels from 2017 to 2021 is identified in the AMP, as is the fact that the current capital funding dedicated to roads is sufficient to provide for an average treatment cycle of 18 to 20 years. This is an example of an area, similar to Bridges, where the fundamental life cycle costing appears to be identified, and the next step is to more clearly and transparently incorporate that information into the capital and operating budget.

In each instance above, the life cycle costs would include both repair and maintenance of existing assets as well as the replacement of existing assets. If these were captured in detail in the AMP, there would be a direct connection between the AMP’s and the capital and operating budgets on an annual basis and there would be clarity each year on life cycle costs.

## **b) Policy Fundamentals**

Taking a more fundamental step back, although the City has an overarching long-term strategic objective in place, there are no formal asset management policies related to the maintenance and replacement of assets, stakeholder roles and responsibilities or expectations regarding service life of the assets. Asset management policies require further refinement in order to incorporate the items just mentioned as well as defining the requirements for each AMP that the City develops, in order to ensure that they are standardized and can properly be incorporated into the master AMP that the City intends to develop. These policies can assist in providing sustainable infrastructure through a process which includes (over the life of the asset):

- A description of how the City will approach capital planning, including how departments and divisions should collaborate to prepare a plan that best meets the operational and financial needs of the city;
- A definition of various types of projects and components (ranging from capital improvements to full-scope capital projects);
- A description of the role of all internal and external stakeholders in the process; and
- An identified decision making criteria as it relates to the capital planning process including a structured process for capital project prioritization and allocating limited resources (further details in Section 3c) below).

IA notes that policy CO3-001 (The Budget Process) captures certain of the aforementioned elements. The policy clearly states its purpose is to “ensure an orderly and timely translation of civic programs into resource, expenditure, and revenue requirements and to provide a basis for enforcing accountability for the proper and prudent management of public funds”. The policy speaks to concepts of accountability, performance, measurement and evaluation of reporting as well as determining project costs and overall responsibilities. However, IA notes that The Budget Process policy is at the surface level and that policies alone without procedures are difficult to carry out and implement. IA notes that although detailed procedures which formally supplement policy CO3-001 – The Budget Process do exist, they have not been updated since 2003. These procedures specifically describe how to carry out tasks prescribed by the policy. The policies are the guiding principles used to set the direction for asset management and capital planning whereas the procedures detail the particular method of accomplishing what is being described in the policy. Awareness of and timely updates to procedures as well as the accountability placed on departments to utilize the procedures will provide the platform for implementing the consistency required to decrease variations from occurring, thereby standardizing asset management and capital planning tasks across the City.

Having these formal asset management policies in place will assist the Asset and Financial Management team of the City in creating more accountability for the individual teams preparing AMP’s and in allowing for more transparent presentation and monitoring of AMP’s and the underlying life cycle costs and operating cost impacts. Having formal decision-making criteria in place for capital project prioritization and allocating resources will assist Asset and Financial Management in reducing uncertainty among Administration and Council come budget time by building more diligence and clarity into the decisions being put forward. The City’s reserve policies are quite descriptive in defining the types of projects that each reserve funds, resulting in areas such as traffic safety improvements, sound walls, and roadways being fairly sophisticated in their individual prioritization processes. However other areas would not have that same level of sophistication and some common ground is required across the City to achieve a synchronized and systematic capital project prioritization process each year.

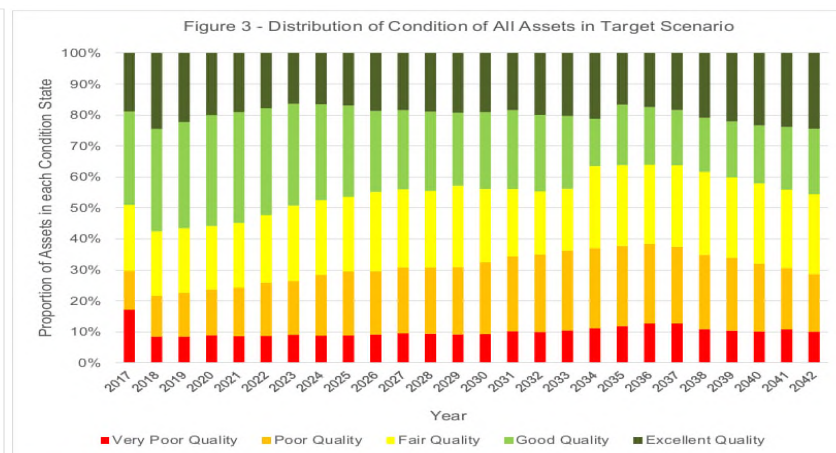
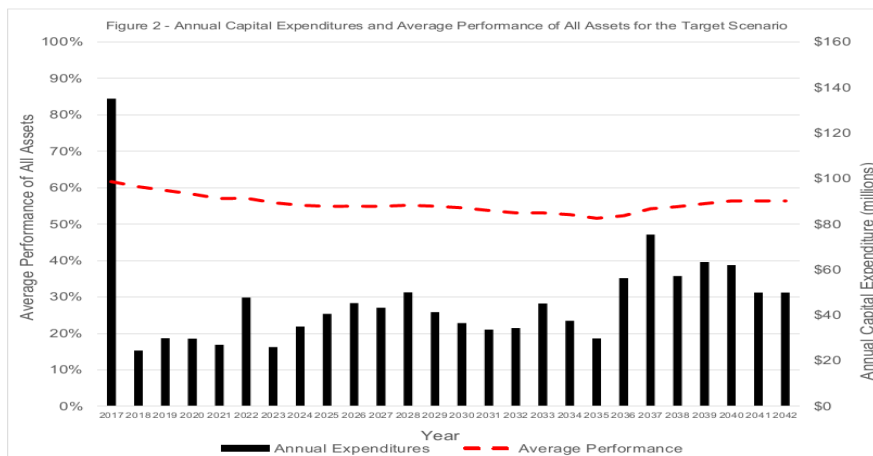
More fundamentally, further asset management and capital planning policies will assist in Asset and Financial Management enforcing more consistent reporting by individual divisions leading to the build-up of the Capital and Operating Budgets. As noted in Section 1, there are low levels of operating cost impacts being formally identified in the Capital Budgets. While in some cases there are certainly capital projects which legitimately have no operating cost impact, in other cases the operating cost impact is either being a) not identified or b) identified but not captured transparently in the budget. Some examples of these projects include the following (IA acknowledges that for those areas which have capital costs in future budget years identified, there would likely be efforts made by Administration to refine the related capital budget and operating cost impacts in those future budget years):

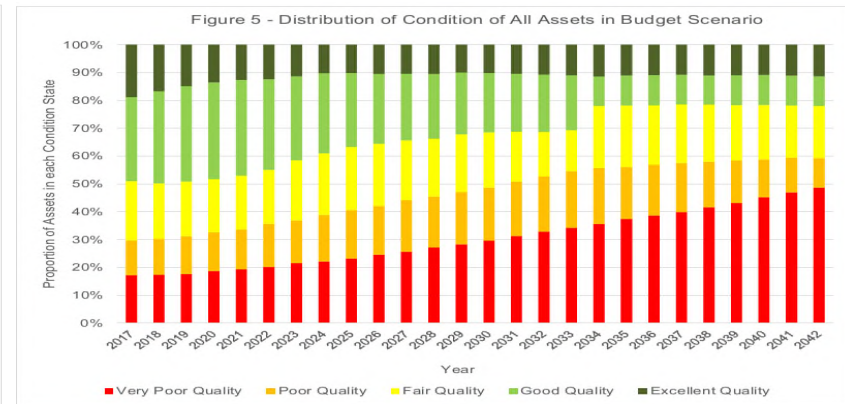
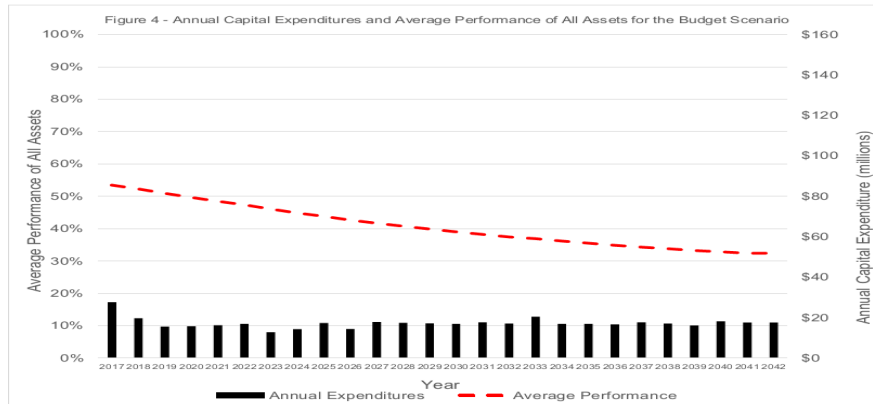
Project	Capital Cost 2017	Capital Cost 2018	Capital Cost 2019	Capital Cost 2020	Capital Cost 2021	Op. Costs identified in the period
T&U – Satellite Yards	\$ 200,000	\$ 6,082,000	\$ 50,000	\$ 100,000	\$ 2,401,000	None identified
LD – Road Extension	\$ 0	\$ 4,392,000	\$ 0	\$ 0	\$ 0	None identified
T&U – Add. Busses	\$ 130,000	\$ 0	\$ 0	\$ 0	\$ 0	None identified
AFM – Power Back-up	\$ 1,500,000	\$ 0	\$ 0	\$ 0	\$ 0	None identified

For the capital projects noted above, the unidentified operating costs could result in the total monetary impact of the capital project being understated. For example, IA notes that the \$1.5 million power back-up capital project is for the installation of a generator to be used at City Hall in the event of a power outage. Although there have been no operating costs identified, fuel, maintenance, other operating costs and eventual significant repairs and/or replacement will undoubtedly be necessary. As a result, the information included in the capital budget does not provide the complete financial implications of the project to be taken into consideration in the decision process of whether to approve, and how to fund, the capital and operating impacts of the project. Similarly, for the \$4.4 million road extension capital project identified above, the extension of a road results in adding more lane kilometers to the roadway network, for which there will likely be several operating cost impacts such as increased road maintenance, street sweeping and snow and ice removal.

Part of the solution to this issue is improved communication between Asset and Financial Management and other departments and divisions which provide inputs into the operating and capital budgets (i.e. at the divisional level, such as Facilities and Fleet (FF), the indication from IA’s interviews and walkthroughs is that operating impacts are frequently built into funding requests however do not always appear reflected in the capital budget). Communication of these operating impacts and life cycle costs is critical not only to transparent budgeting but also to the ability of the individual divisions to achieve the needed level of service from the asset base. Please refer to Section 5 of this report for more detailed discussion of capturing of operating cost impacts and life cycle costs.

Interviews and walkthroughs conducted with Major Projects and Facilities and Fleet by IA indicated that there is opportunity for more collaboration between Asset and Financial Management and the individual divisional stewards of the assets in terms of communicating the required operating impacts and life cycle costs for future and capital projects, as there may be instances in the current process where levels of service communicated are not sustainable based on current and projected funding levels. These potential gaps between the spending required to attain/maintain a level of service and the planned spending are best communicated in the AMP’s. The recently approved AMP for the City of Waterloo (referenced throughout this report) provides an excellent example of how to illustrate these gaps in a fashion that is transparent to the users of the document. The top two figures show the target spending recommended in the AMP and the resulting asset performance and condition for the City of Waterloo’s assets as a whole as opposed to the currently budgeted spending and its impact on asset performance and condition in the bottom two figures.





**c) Capital Project Prioritization and Allocating Resources**

The City of Saskatoon has a significant number of capital reserves which assist it in financing approved capital expenditures. One of the major advantages of this is that reserves dedicated to the replacement of existing assets eliminate the need to weigh those projects against other capital projects for general capital funds. Bylaw 6774 (“The Capital Reserve Bylaw”) is quite prescriptive in the purpose, means of funding, and types of expenditure related to each of the over 50 capital reserves. For example, the “Civic Buildings Comprehensive Maintenance Reserve” (CBCM) is quite specific in the fashion in which it is funded and the types of expenditures requiring identification in order to be funded by the reserve. The one reserve which is not as prescriptive is the “Reserve for Capital Expenditures” (RCE), which by design is quite non-specific, allowing for both the funding of the reserve and the spending from the reserve to be quite discretionary. The intent of the RCE is to continue to fund projects that are discretionary and that are not part of the normal operations of the City.

The City’s current capital project prioritization process as it relates to spending from the capital reserves has some formal elements and it is supported by an underlying logic in the decision-making process. There is a consideration of needs in the process that takes into account factors such as replacement schedules, condition assessments, expansion or growth demands, and other inherent criteria. The institution of a more formal prioritization process that would be consistent across the various divisions and departments of the City is less important for capital projects that are funded through existing reserves, including those projects being funded via the discretionary RCE, which as noted above funds all capital projects that do not have a dedicated funding source. IA notes that a fairly detailed capital prioritization process for the RCE was presented to City Council by Administration in 2008 and IA’s understanding is that City Council at that time decided not to move forward with the process. The rationale was that given the relatively small spending from the RCE, there was not significant benefit to implementing such a detailed, formal capital prioritization process for it. The same would generally hold true when considering capital projects that are funded through one of the specific reserves – based on the criteria in place per the bylaws for each reserve, there is sufficient experience and knowledge in place within the individual divisions responsible for making decisions on capital projects to be funded within the reserves to enable proper prioritization (where applicable). As such, applying an overarching capital project prioritization process would not be a meaningful addition for capital projects funded through existing capital reserves.

There is, however, an area of the City’s capital spending that IA believes could benefit significantly from a more rigid, formal capital project prioritization process and which could result in further accountability and transparency with respect to resource allocation. As part of its long-term financial planning, the

City ensures that funding plans are in place prior to moving forward on major capital projects, which have sources of funding that are over and above the reserves in place. City Council has approved a number of funding plans to-date to assist in moving forward a number of major capital projects, examples of which include: Roadway Financial Management Strategy, Major Recreational & Cultural Facilities Funding Plan, Gas Tax Allocation Plan, Civic Facilities Funding Plan (CFFP) and Major Transportation Infrastructure Funding Plan (MTIFP). There could be additional funds approved in the future as well for areas where supplemental one-time funding is needed over and above existing reserves. The application of a more formal priority-setting method for this aspect of the capital budget could provide additional and better information for decision-making and assist further in providing justifications for decisions.

While City Council priorities serve as an underlying evaluator for items in the funding plans and/or the 5-year capital budget, there is room to incorporate a more detailed and documented capital project prioritization process. This concept would be consistent with the current multi-year budgeting initiative as well, as the importance of selecting the right projects for the “right reasons” is heightened in a multi-year budgeting cycle. One suggested area of improvement from IA’s Multi-Year Budgeting report was to “Design an effective method to allocate and deploy capital and make investment decisions over a Council term”.

When making decisions regarding projects to be paid from sources such as the New Building Canada Fund and the Gas Tax Fund, it would be highly beneficial to Administration and City Council to have a documented set of rationale and criteria in place to support the projects chosen. This would be consistent with, and supplementary to, the “Federal Infrastructure Funding Strategy” report that was presented by Administration to the Governance and Priorities Committee of City Council in April of 2016. There are many types of projects available to be funded by the Gas Tax Fund, some examples of which might include local roads and bridges, public transit, solid waste, brownfield redevelopment, sports infrastructure, and recreational infrastructure. Note that these are examples only; as the City applies for already funded projects and then redistributes the existing funding, it would not be restricted to the types of projects provided as examples. All of the Gas Tax funding received under the initial Gas Tax program (from 2005 through 2014) was dedicated to transportation projects. When weighing decisions within the MTIFP, it would be beneficial to have a documented set of rationale and criteria in place to support the projects chosen. Current projects funded via the MTIFP include interchanges, contributions to the Bridge Major Repair Reserve, and an accelerated transit bus replacement program.

Items such as fire halls, recreation facilities, and libraries continue to be a challenge, as do larger-scale projects stemming from growth considerations such as City Centre and North Downtown, and Bus Rapid Transit. The use of a common set of rationale and criteria in place would be beneficial in terms of evaluating the spending on these items against other capital project needs. The use of this rationale and criteria could become a component of the funding plan itself, or a supplement to the funding plan, in order to increase accountability and transparency with respect to resource allocation. Each funding plan currently has a list of proposed projects, the source(s) of funding, and the cash flow or phase-in of operating budget dollars for operating impacts, capital or for debt payments. The list of proposed projects could include details on the ranking of the projects against the designated criteria and even which projects may not have made the funding plan as the result of not meeting certain criteria. This could also provide documented clarity in the funding plan regarding the rationale for the projects being proposed for adjustment or elimination.

In the City of Saskatoon’s “Long-Term Financial Sustainability Plan: 2015-2025” there is discussion of recommendations from a 2013 Canada West Foundation Report including that ...”priority should be given to infrastructure that enhances economic performance”, “government should encourage innovative approaches to the design of public infrastructure”, and “governments should not focus exclusively on new infrastructure at the expense of re-investment in existing infrastructure”. The Long-Term Financial Sustainability Plan indicates that these recommendations should be considered as decisions are being made regarding new investment into the City’s infrastructure, therefore these broad recommendations could serve as the baseline for the more detailed rationale and criteria to be developed.



Risk is a fundamental consideration when it comes to project prioritization. Project prioritization can be attributed to the risk that the project represents if it does not move forward. A more simple quantification of risk can be formed when assessing a given portfolio of capital project options by considering only two factors associated with the asset in question: a) the probability of failure (i.e. what is the physical condition of the asset) and b) the consequence of failure (i.e. if the asset fails, what is the effect). An example used in the City of Waterloo asset management plan is the failure of the air conditioning system at a small recreation center leading to program and service disruptions for a small number of residents and clients (low consequence) versus at a large recreation center. More complex examples of decision-making criteria could be as follows and different weights could be applied to each depending on the City's preferences:

- Degree of direct impact on health and safety;
- Legislative and/or legal requirements;
- Impact on sustainability;
- Impact on asset integrity;
- Impact on program integrity and delivery;
- Financial considerations;
- Timing and implementation considerations; and
- Community interest/impact.

Currently existing individual asset management plans speak to the City's asset inventory, valuation, replacement costs, level of service and condition assessments. One element to be incorporated that would be crucial to the City's ability to implement clear decision-making criteria related to the capital planning process (to allow for a more structured process for capital project prioritizing and allocating limited resources) would be asset risk assessments. In each individual AMP, as well as the master AMP, this would require determining how critical the asset groupings are to the City and the likelihood and consequence of asset failure. This will assist the City in identifying the true value of the asset to its ability to effectively deliver services to citizens and will allow for the decision process outlined in the paragraphs above to occur effectively. IA notes that as the City continues to explore the move towards a new ERP system, it will be critical to ensure that the system has direct capabilities, or the ability to interact directly with, tools and software that will assist in ensuring asset management plans are accurate and timely. The ability of a new ERP system to enhance the City's asset management is crucial.

Formal decision-making criteria for capital project prioritization will supplement the formality already existing in the Capital Reserve Bylaw with respect to the purpose, means of funding and types of eligible expenditures and will assist in reducing uncertainty among Administration and Council come budget time by building more diligence and clarity into the decisions being put forward.

Included in the City's asset management and capital planning policies and/or the master AMP should be identified decision-making criteria related to the capital planning process to allow for a more structured process for capital project prioritization. This process would be akin to the evaluation of an RFP or a similar exercise in which clear criteria are developed to eliminate bias and subjective factors from the process. The City of Ottawa has such principles in place (see Appendix A) and the City of Edmonton is continuing to enhance its risk assessment tools, which are used to rank its infrastructure rehabilitation needs and determine how to allocate funds optimally across its various infrastructure assets to ensure long-term value.

**i) City of Edmonton Risk Assessment Process Description**

The City of Edmonton claims to be the first City in Canada to have developed a comprehensive inventory of its infrastructure assets to use for evaluating the state and condition of diverse infrastructure assets. The City of Edmonton has a risk assessment methodology in place to assist in determining the level of risk associated with infrastructure failure. By using information from its standardized rating system, Edmonton's Office of

Infrastructure and Funding Strategy can forecast future condition and risk of an asset in relation to various renewal (i.e. rehabilitation and replacement) actions taking a balanced approach integrating social (i.e. health and safety), environmental (i.e. impact on the environment), and economic (i.e. cost of failure) objectives into the decision-making process. Edmonton's risk methodology does not attempt to address uncontrollable factors of failure (i.e. external random factors, such as a tornado).

The City of Edmonton groups assets according to similarities in performance and deterioration characteristics and then the controllable deterioration of each asset type over time (depending on a given rehabilitation strategy) is determined. Their assets are grouped into one of Transportation, Environment and Safety, Social Infrastructure, and Corporate Infrastructure and then divided further into 14 infrastructure subgroups. This standardized rating system enables Council and Administration to have consistent information when comparing the condition of separate infrastructure elements and in establishing funding priorities. Risk levels are measured using numerous indicators such as:

- Portion of an asset deemed to be critical (expected to fail) – those assets that have deteriorated past expected service life;
- Impact of failure of an asset – measured by social, environmental, and economic indicators and factoring Edmonton's objectives;
- Overall condition – categorized by either A (very good) through E (very poor) using the standardized rating system; and
- Severity – reflects the overall likelihood of asset failure, the expected amount of failure and the impact of the failure on Edmonton.

The City of Edmonton believes that risk assessment provides a uniform approach for dealing with different types of assets and has the ability to compare one type against another type. Their model is designed to help predict the impact of different funding scenarios in the context of overall infrastructure needs, enabling them to determine where available funding can provide the most benefit. Their intended result is an unbiased and objective measure of the seriousness of the asset and the ability to prioritize funding to deal with the most critical assets first.

The culmination of the above for the City of Edmonton is its Risk-Based Infrastructure Management System (RIMS), a custom made tool that assists in the ranking of rehabilitation needs and the allocation of renewal funds across the various infrastructure assets to ensure long-term value. RIMS includes methods for simulating asset deterioration over time by incorporating various rehabilitation and renewal scenarios and enables the testing of various funding strategies to assist Administration in determining how certain funding levels impact infrastructure. RIMS is used in the City of Edmonton's capital budget process to assist Edmonton in "making the most of every dollar invested with the limited funding available".

#### **d) Overall Guidelines Based on Municipal Asset Mix**

Like all municipalities, the City has a large and complex asset mix, making it difficult to discuss lifecycle expenditure requirements at a high level (i.e. before moving into the individual functional areas of the City and its asset base) other than to use average spending level based on overall asset value as a guideline. The City of Waterloo, with examples referenced in this report, has taken steps to quantify this more accurately for purposes of their asset management planning and budgeting. There are guidelines in existence which provide a general idea of the appropriate amount of spending needed for overall lifecycle maintenance of an asset base – for example the American Public Works Association has published guidelines allocating a minimum of 2% to 4% of current replacement value to provide for renewal of facilities, while other published guidelines refer to a range of 1.5% to 2.5%. For its overall asset base, the City of Waterloo has estimated that it spends at 1.4%, while the City of Ottawa has targeted its figure for facilities only at 1.5%.

Currently, Facilities and Fleet (FF) at the City obtains condition assessments of their facilities-related infrastructure every 5 years or less (i.e. each asset owned and within the scope of FF will have a condition assessment at least every 5 years). This guides FF's capital replacement program. FF is currently developing their AMP document, which will include details on the various maintenance and restoration treatments that need to be applied to their facilities to achieve desired service life. The AMP is also intended to describe how condition assessments are conducted and the technical requirements integrated into the process. In discussions with FF, with respect to the CBCM, the funding in that capital reserve directly impacts the ability of FF to properly maintain and



replace the assets which they have stewardship over. The intent of IA's comments in this area is not to assess specific funding levels in place related to FF and the CBCM, but to use them to illustrate the need for development of guidelines for estimating lifecycle cost needs for groups of assets and the City as a whole.

**e) Other Leading Practices from Canadian Municipalities**

Further examples of overarching asset management and capital planning policies can be found in the municipalities of Ottawa, Windsor, Calgary and Waterloo.

**City of Ottawa** - The City of Ottawa approved a comprehensive asset management policy in 2012. The policy has guided the City of Ottawa towards making asset related decisions that are more intentional, anchored on sustainability, and take into consideration the City's risk and fiscal constraints. As a result, the City of Ottawa has adopted a risk-based decision making process (Appendix A) that considers the likelihood of asset failure and the consequence of a failure with regards to impacts on safety and levels of service. This could serve as a valuable reference for the City of Saskatoon as it attempts to formalize its decision making criteria. Currently the City Council and Civic Surveys have significant roles in determining priorities and it would be prudent for Administration to incorporate more formal risk-based decision-making criteria into the asset management planning process in order to provide more systematic means of making investment decisions.

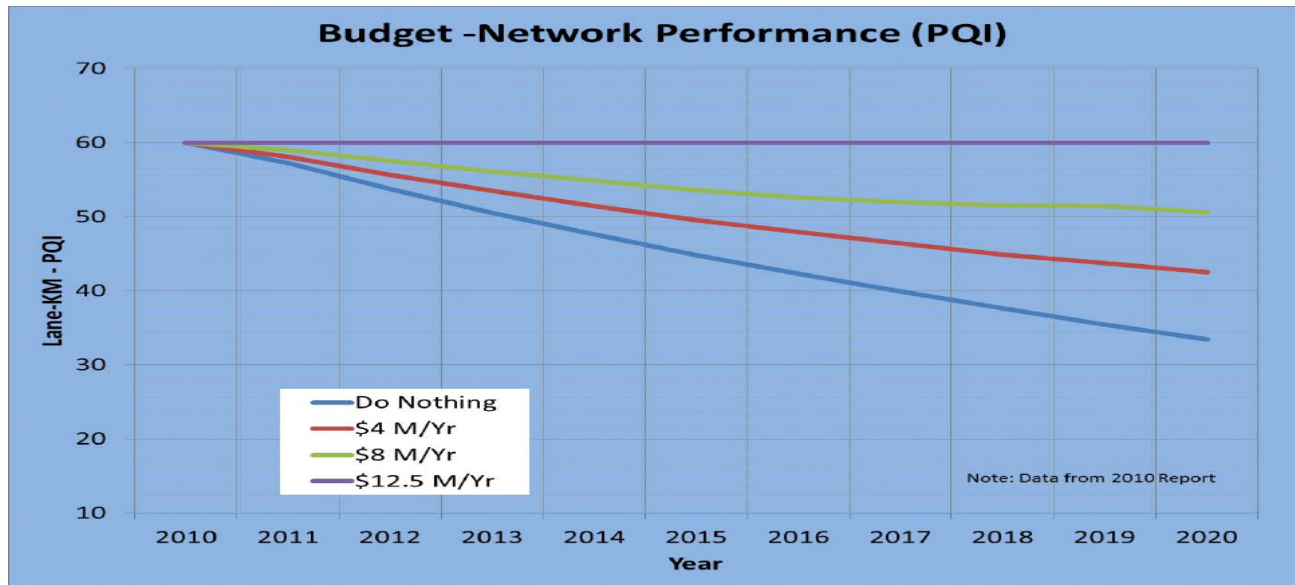
The City of Ottawa supplements their comprehensive asset management planning with detailed long-range financial planning. The long-range financial planning directly takes into account the capital funding gaps and requirements that are determined within the asset management plans and provides significant detail regarding capital funding and capital expenditures that is essential to linking the asset management plans and the budgets. Further detail on relevant practices that could be applicable to the City of Saskatoon is included in Section 5.

**City of Windsor** - The City of Windsor released a comprehensive asset management plan and strategy in 2013, which included a corporate-wide asset management plan overview as well as states of local infrastructure, desired levels of service, and asset management strategies for each major area within the City of Windsor. This brought together all key elements of the City of Windsor's infrastructure in one document and established the strategy to be followed – as the City of Saskatoon works toward their master AMP, the example of the City of Windsor will serve as a valuable reference. The City of Windsor overarching AMP influences the financial forecasts within the long-term financial plan and the decision framework and infrastructure needs identified in the AMP form the basis on which future capital budgets are prepared.

**City of Calgary** - The City of Calgary developed an overarching asset management policy in 2011, which led to the development of a supporting asset management strategy and governance in 2012 which outlines governance and the various products and deliverables of the corporate asset management program. The Asset Management Plan itself is a byproduct of the policy and the strategy and it integrates business unit asset management plans from group across the City of Calgary, which are continuing to develop stand-alone asset management plans.

**City of Waterloo** - The City of Waterloo developed a detailed asset management plan that was most recently updated in November of 2016. The plan was initially developed in 2014 as an interim plan and from a financial standpoint presented financial information for 2015 and the following 10 years. At that time a plan was put in place to develop a more comprehensive asset management plan covering a significantly increased scope of assets and addressing full lifecycle costing by 2016. The asset management plan is quite advanced in terms of presenting the capital expenditures required over a 25 year period to achieve the targeted average performance of assets over that period and the distribution of the condition of all assets in that target scenario (i.e. proportion of assets that are expected to be very poor quality, poor quality, fair quality, good quality and excellent quality). There are corresponding illustrations to show what currently budgeted capital expenditures will achieve in terms of average performance of assets. The asset management plan includes detailed illustrations of

the impact of different maintenance levels on the condition of certain assets (i.e. the implication of spending between \$0 and \$12.5 million annually on roads and the implications for the Pavement Quality Index as shown in the figure below) in order to facilitate discussion amongst Council and Administration.



## f) Recommendations

#1 - IA recommends that when the City develops its asset management and capital planning policies (including a master AMP), it incorporate fundamental aspects of asset management planning as outlined above and take into account leading practices from municipalities such as Ottawa, Windsor, Calgary and Waterloo, which have recently undergone such initiatives.

**Supplement to recommendation:** for clarity's sake, the fundamental aspects of asset management planning outlined above include:

- Clear definition, development and reporting of life cycle costs, including operating cost impacts, with a clear link to annual budget documents;
  - Also incorporating the consideration of multiple scenarios (i.e. ongoing maintenance costs with ideal service levels in place versus ongoing maintenance costs with less than ideal service levels and/or average asset useful lives).
- Formal policies related to maintenance and replacement of assets including stakeholder roles and responsibilities and service life expectations;
- Personnel accountable for asset management (i.e. departmental and divisional collaboration required);
- Create awareness of, make timely updates to and place accountability on departments to utilize detailed procedures which supplement the overarching Council Policy Co3-001 "The Budget Process"; and
- Consideration towards determining overall guidelines for spending by asset category to provide benchmarks for high-level lifecycle budgeting.

**#2** – IA recommends the incorporation of formal risk-based decision making criteria be incorporated to allow for a more structured process for capital project prioritization and the allocation of limited resources. These criteria would primarily be applicable to major capital projects that are funded outside of the Capital Reserve Bylaw. We recommend the City take into account leading practices from municipalities such as Edmonton, Ottawa and Waterloo as referenced and illustrated in this report.

**Supplement to recommendation:** as noted earlier, a capital budget prioritization discussion paper was developed (primarily with respect to the RCE reserve) in 2008. The content of the discussion paper could be a strong starting point for re-visiting this topic, particularly when considered together with the leading practices referenced within this report. The discussion paper discusses the concept of separating projects into categories (i.e. core projects, essential projects, and discretionary projects) and details criteria within each of those 3 categories. The discussion paper then further details a point system that could be utilized for prioritizing the projects within the categories, awarding points for various items including the following: public health/safety, City Council commitments, service delivery, fiscal impact, project interdependence, severity of foregoing project, and conformity with strategic plans/policies.

## **4 – Direction of Capital Asset Management**

### **a) Direction of Capital Asset Management**

The direction of capital asset management at the City is driven by a combination of Council, the Leadership Team, and the individual stakeholder groups charged with the stewardship of their asset categories. Within the Asset and Financial Management department, a combination of the Finance and Financial Planning divisions are charged with overall coordination of the individual AMP's. This can present challenges in that, unlike certain other municipalities that have been explored in this report, there is no dedicated team that is charged solely with the mandate of asset management, but rather it is a responsibility that is layered into existing divisions within the Asset and Financial Management department.

Proper direction of capital asset management across the City requires those finance personnel with responsibility for capital asset management to work with multidisciplinary team members including engineers and project managers to develop AMP's, determine capital budgets and make funding allocation recommendations.. This multidisciplinary and collaborative working relationship is ongoing in nature given that capital assets have a prolonged impact on operating budgets.

One of the challenges of achieving this City-wide is that out of necessity it is done on a division by division basis, and there is low consistency in how capital asset management and AMP's are being done between divisions. The level of integration both within the individual divisions and between those divisions and the responsible finance personnel varies depending on the level of sophistication and buy-in existing at the divisional level with respect to asset management. For example, Roadways has more formal documentation and planning in place as a result of the exercise carried out leading up to the implementation of the dedicated road levy and the significant ramp-up in attention to the Roadway assets that followed, which assisted in the development of the 2016 Roadways AMP. Parks and Transit on the other hand have taken a higher-level, average age approach within their asset base which, while sufficient to start the asset management planning process in 2016, may not be sufficiently detailed to achieve continued AMP initiatives going forward due to the limited information on future projected life cycle costs, and the varying impacts these life cycle costs might have on service levels. Taken one step further, in the context of the capital prioritization recommendation made in Section 3, there may currently be insufficient information available for some major asset categories to allow for an overarching risk assessment to be performed by the City.

There is no formal, sustainable collaborative approach that has been developed at this stage between those finance personnel with responsibility for capital asset management and the City-wide divisions to ensure that asset management is a continuous process and not only performed at the point in time of developing the initial AMP. In the current state, there are limited formal supporting systems in place (i.e. further supporting systems are needed) to drive the integration of Asset & Financial Management with City-wide divisions in order to achieve effective asset management planning going-forward. This is further impacted by the lack of an official team that is dedicated to, and deals solely with, capital asset management issues.

### **b) Recommendation**

**#3** - IA recommends that formalized criteria be developed to set out the roles and responsibilities that Asset & Financial Management will play in ongoing asset management compared to the roles and responsibilities of the individual stakeholder divisions. The aim of these criteria would be to yield a consistent level of integration between Asset & Financial Management and the various stakeholder divisions, which ultimately will assist in ensuring that long-term asset performance can be sustained and funded at a level that meets the level of service articulated to the stakeholders and citizens. It will also drive an increase in accountability between the stakeholder divisions and Asset & Financial Management with respect to the asset management planning process.

## 5 – Determine Impact of Capital Projects on Operating Budgets including Life Cycle Costs

### a) Budgeting Process and Contextual Facts and Figures

The City's budgeting process is guided by Council Policy CO3-001: The Budget Process. With respect to capital projects, CO3-001 3.4 outlines the relevant guidelines which drive the City's capital planning and budgeting, which is the focus of this IA project. More specifically, in CO3-001 3.4 b) iii), it states that for the estimation of project costs, for each capital project it "should indicate what impact the project will have on the operating budget (i.e. cost to operate and maintain the capital asset)". The inclusion of both "operate and maintain" is key as the cost to operate an asset would be the impact of that capital project on the annual operating budget going-forward, while the cost of maintaining the capital asset would be the life cycle costs associated with that capital project over its life, which in most cases will be a combination of operating and capital expenditures.

In the 2017 Approved Operating & Capital Budget for the City, there was a total approved investment in capital projects of \$261.9 million, including Land Development. The total operating budget impact of capital investments identified in 2017 was a total of \$1.6 million (or 0.6%) over the 2018 to 2020 period, of which 55% related to operating increases necessary for the operational success of the Construction and Demolition Waste Management Centre (i.e. Recovery Park). Excluding Recovery Park, the total operating budget impact of capital investments identified in 2017 was \$0.7 million or 0.3%.

In the 2016 Approved Operating & Capital Budget for the City there was a total approved investment in capital projects of \$228.8 million, including Land Development. The operating impact of capital investments identified in 2016 was a total of \$1.4 million (or 0.6%) throughout the 2017 to 2019 period, almost 2/3 of which related to land development projects. The primary type of operating cost impact identified for the land development projects was increased park maintenance costs for new park developments. Excluding the land development projects, the total operating budget impact of capital investments identified in 2016 was \$0.6 million or 0.3%.

	2017	2016
Capital investment (including land development)	\$261.4 million	\$228.8 million
Operating costs impact (\$)	\$1.6 million	\$1.4 million
Operating costs impact (%)	0.6%	0.6%

Through IA's review of the capital budget, a disclosed operating cost impact of 0.6% (or 0.3% excluding land development projects) appears to be low and does not capture the full operational impact of these capital investments, which are in excess of \$200 million in both 2016 and 2017.

### b) Consideration of Operating Impacts and Life Cycle Costs

The lack of sufficient consideration of operating impacts and life cycle costs of capital projects is not unique to the City of Saskatoon and is in fact common for municipalities, due to a combination of failing to properly understand project needs, not effectively prioritizing the importance of properly identifying operating impacts and life cycle costs within the capital project budgets, and/or lacking the tools and methodologies for calculating or reporting costs. That being said, operating impacts and life cycle costs should be one of the most critical considerations when deliberating whether or not a municipality should proceed with a capital project given that they typically require additional operating budget burden.

The City should ensure that operating impacts and life cycle costs of capital projects are discussed and quantified in the budget document. Operating impacts can be classified in terms of increased revenues, increased expenditures and/or cost savings. To ensure that operating impacts and life cycle costs are identified, the following items are of key importance:

- Development of policies and procedures that requires capital planning and asset management documents (or plans) to include operating impacts and life cycle costs when submitted in order for approval to be obtained. As mentioned earlier, policies alone without procedures are difficult to carry out and implement. Procedures should follow the policy and specifically describe how to carry out tasks in a more detailed fashion. While the policies are the guiding principles used to set the direction, the procedures describe the particular way of accomplishing what is being described in the policy. Procedures provide the platform for implementing the consistency required to decrease variations from occurring, thereby standardizing the process.
- Staff involved with estimating operating impacts should be trained on documentation of their assumptions/methodology. Items to consider when making assumptions include:
  - Timeframe to determine when costs, savings or revenue will start;
  - Various anticipated phases of the project;
  - In-house versus external operations;
  - Type of work being done; and
  - Whether the costs, savings, or revenues are recurring or non-recurring.

IA notes that for the operating cost impacts that the City does currently identify, there are challenges in identifying the funding for those operating costs. There are often decisions made that result in new operating costs being absorbed into existing budgets. While this in and of itself is not necessarily a root cause of the issue, there is a need to provide details on the full extent to which operating cost impacts exist and from that total population the impacts can be delineated into those which are being absorbed into existing budgets and those which have an incremental spend attached. If each capital spend is approached with the rebuttable presumption that some degree of life cycle costs and operating cost impacts are applicable, this will assist in capturing the full initial details. Section 7 provides further explicit details on the presentation of these items once they have been determined.

### **c) Leading Practices from Canadian Municipalities**

Using the example of the City of Calgary introduced in Section 3, the Asset Management Plan is the key driver of the 10 Year Infrastructure Investment Plan (IIP) and the 3 Year Business Plan and Budget. This is a relevant example for the City of Saskatoon to consider given the continued trajectory towards introducing Multi-Year Budgeting. Even without taking into consideration the Multi-Year Budgeting, the City of Calgary example provides relevant context in terms of creating strong linkage between AMP's and the budgeting process. The City of Calgary is moving towards having budget approval to align with the "Stage Gate Methodology" in 2017. The Corporate Project Management Framework (CPMF) Committee and the Finance business unit are leading the implementation of a capital budgeting process that aligns to new stage gating, risk management and estimating/contingency standards. Given that the budget process is changing in 2017, the budget approval template discussed in the paragraph immediately below will likely be updated accordingly.

The City of Calgary's IIP includes all potential capital projects and programs within a 10 year period, whether funded or unfunded. All capital projects and programs are required to have some form of accompanying business case, including a capital project budget request approval template. Capital projects that are included in the IIP are linked to the various business units' AMP's. Capital prioritization criteria are required to align to the overall capital budget guidelines. Included in the capital project budget request template used by the City of Calgary are the following: purpose/objective of the capital project, project sponsor, alignment with strategic goals/objectives, scope, cost (including a contingency amount of up to 10%), timing of completion, timing of expenditures, required annual operating budget to operate and maintain the capital asset, and risks and risk mitigation strategies. The City of Calgary indicates whether the budget amount request is based on preliminary estimates therefore may vary by a large range (i.e. 30% to 50%) or whether it comes from a more refined project cost estimate.

Continuing to use the example of the City of Waterloo introduced in Section 3, the Asset Management Plan includes a financing strategy of 10 years, with the first year representing an approved capital budget followed by a 9-year capital forecast. The financial plan incorporates the needs identified from the individual components of the asset management plan. In order to clearly demonstrate the life cycle costs associated with capital projects, the capital spend of the City of Waterloo is refined into the areas of: non-infrastructure solutions, maintenance activities, renewal/rehabilitation activities, replacement activities, disposal activities and expansion activities. For further details refer to Section 7.

#### **d) Recommendations**

**#4** - IA recommends that Administration incorporate strict guidance for capital project submissions to the budget regarding the incorporation of asset life cycle costs and operating cost impacts.

**Supplement to recommendation:** Administration should consider whether to incorporate a rebuttable presumption that some degree of life cycle costs and operating cost impacts be identified for each project, and in the absence of both or either an explanation is required from the submitting party. This will increase accountability for the capital project teams in properly identifying asset life cycle costs and operating cost impacts and increase Administration's ability to incorporate them fully into the budget process. An example of this currently in place is the City of Calgary's business case requirements for capital projects and programs, including their "Request for Capital" template.

**#5** - IA recommends that for all capital projects where there is an absence of operating cost impacts and life cycle costs, an explanation be provided or that a direct reference be included in the capital project description of where these costs are included.

**Supplement to recommendation:** For example, if the operating cost impact for a capital project is being absorbed elsewhere in the operating budget, this should be described and quantified in capital project's description. Operating costs should be designated as funded or unfunded. If funded, sources of funding should be identified. This detail will provide useful information to Council throughout the budget decision-making process.

## **6 – Multi-Year Capital Planning**

The City of Saskatoon has a 5-year capital plan that is updated and published each year as well as a 10-year capital plan that is prepared for internal distribution only. Leading practices suggest that a 3 to 5 year period is sufficient, and while Saskatoon has a 10-year capital plan internally we note that other municipalities recently embarking on significant asset management strategies have publicly forecasted their capital expenditures out as far as 10 years (i.e. Waterloo).

The prioritization of items within the City's capital plan will come back to recommendations made in earlier sections of this report – although the prioritization process itself need not be spelled out explicitly in the published capital budget document itself, having a robust set of criteria in place that can be applied during the development of the capital budget ensures that balanced and well-informed decisions are made and can be justified.

The current process in place at the City allows divisions to provide initial prioritization, incorporates input and participation from major stakeholders and the general public (through the use of the Civic Survey and Citizen Budget Tool), and re-evaluates capital projects approved in previous multi-year capital plans. The areas where improvements can be made are anticipating operating budget impacts, and life cycle costs, resulting from capital projects and the use of a defined, City-wide rating system to facilitate decision-making (all of these items are addressed in other sections of this report).

Although multi-year capital planning is currently in place, the City's potential move to overall multi-year budgeting for all aspects of the strategic planning and budgeting process will of course have implications towards the current capital budgeting process. A suggested area of improvement directly related to multi-year budgeting is to closely tie capital expenditure planning to operational planning to understand short-term and long-term operating expense impacts. It will be necessary for there to be a high level of synchronicity between the City's multi-year budgeting initiative and further asset management initiatives.



## **7 – Present, Monitor and Report on Budgets and Projects**

### **a) Presenting the Capital Budget**

Incorporating the capital budget into the budget document presents unique challenges for municipalities, as capital projects typically require large financial obligations spanning multiple fiscal years. The capital budget should be directly linked to the asset management plan(s) of the City. Leading practices outlined by the Government Financial Officers Association (GFOA) indicate that the capital budget should (at least) contain the following components:

- A broad based definition of capital expenditures capturing asset life and costs.
  - While the City’s “Approved Capital and Operating Budget” contains a section for the capital budget which provides relevant details of the capital investment, asset life and costs are not currently directly captured in the City’s budget reporting aside from operating cost impacts.
  - While the current AMP’s provide details at a high level regarding asset life, more detail in the AMP’s would be highly beneficial (as outlined earlier in this report) and then would allow for direct linkage of that detail to the capital budget.
- A specific place within the budget document as it is difficult to follow the various elements of the capital program if information is scattered throughout the document.
  - The City’s budget document accomplishes this.
- A description of the sources of funding and uses of the asset, including an indication of the total dollar amount of capital expenditures for the budget year, for each year in the multi-year plan and the total plan. The capital plan sources and uses summary should include all projects (regardless of where the funding comes from) that fit within the definition of capital expenditures. Funding sources should be identified for all aspects of the project, clearly noting those sources with financing requirements (i.e. debt service). Estimate costs of each project, based on recent and accurate sources of information, recognizing project costs may inflate if multi-year. This information can be presented by department and division, fund, category, priority, strategic goal, or geographic location.
  - The City’s budget document accomplishes this. In addition, IA has made a recommendation in this section with respect to additional incorporation of categorization into its capital budget and individual capital projects.
- A process that communicates major steps within the capital budget decision making process. These steps include identification of key dates in the capital budget process along with text describing the process, prioritization of capital projects and the criteria used therein, reporting on the capital project (including review status, expected completion dates, capital project detail, description and cost, timetable and operating impacts).
  - The City’s capital budget currently captures capital project detail, description and cost, timetable, and operating impacts (although not to the full extent, as discussed elsewhere in this report). There are recommendations within this report related to the prioritization process and once a fulsome set of criteria are developed, this would allow for Administration to further discuss this criteria within its capital budget document.

### **b) Leading Practices from Canadian Municipalities**

Relevant examples of leading practices in presentation of the capital budget in cities which have overarching asset management and capital planning policies in place to support the capital budget can be found in the municipalities of Ottawa, Windsor, London, Waterloo and Calgary.

**City of Ottawa** - the City of Ottawa's capital budget summarizes capital spending to 4 distinct areas: "Renewal of City Assets, Regulatory, Growth, and Strategic Initiatives". The spending in each of these areas is shown for each area of the City of Ottawa, alongside the actual spending for the previous year and the forecast spending for the subsequent 3 years.

Renewal of City Assets projects involve lifecycle maintenance to care for existing assets, Growth projects are to support new residents and businesses, and Strategic Initiatives address ongoing community priorities and fund new programs and assets that are not growth related.

- Strategic Initiatives are determined by community needs not characterized as lifecycle or growth related and consist of items such as community-related facilities, affordable housing, new street or park pathway lighting, sports field development, and park and intersection improvements. These projects are considered to gradually increase the level of service throughout the City of Ottawa and are an important part of the City's day-to-day service delivery to residents. Also included in this category are new initiatives that provide a new or improved level of service, such as new transit initiatives, a new library branch, and expansion of the ambulance fleet that are driven by improving service to existing residents rather than by growth. Strategic Initiatives are generally funded through taxes and utility rates.
- Renewal of City Assets involves the expenditures necessary to address ongoing needs of physical assets as well as deferred maintenance activity. These items are generally funded from the property tax base or water and sewer surcharge rate base.
- Growth projects involve new or expanded municipal infrastructure for new residents and businesses. These projects are funded both by development charges and by property taxes and utility rates as these growth projects benefit existing residents as well as new residents (i.e. the benefits extend far beyond just the direct growth area creating the need).

**City of Windsor** - The City of Windsor's capital budget includes a summary of growth vs. maintenance related projects for each service area and division within the departments of the City of Windsor, over a 5-year period (both in total and for each individual year). This provides a clear picture of the % of growth versus maintenance spending for the city as a whole as well as for each service area and department.

The individual capital project details for the City of Windsor also describe in detail any unknown operating cost impacts at the time of budget. For projects with more significant and/or complex operating cost impacts, there can be up to a whole page included in the capital budget outlining the individual operating costs associated with the capital project as well as any offsets to those impacts (i.e. salary offsets due to internal job realignments or projected increases in revenue as a result of the capital project) to arrive at the net operating cost impact.

Operating Budget Impact			
Effective Date	Description	Exp/(Rev)	FTE Impact
2017-01-01	With the project launch target of Q4 2015, the additional operating costs slated to begin in year 2 would begin in 2017. The operating costs of the project for years 2-5, are estimated as a net annual increase of \$160,109 (subject to changes in CPI and annual negotiated increases, as well as offsets by other potential savings and efficiencies). In addition, the staff establishment at Transit Windsor will be adjusted by a net 1 FTE position as a result of the addition of 1 FTE Hardware Support Specialist and the conversion of 1 FTE Statistics and Transit Technology Coordinator to 1 FTE ITS Coordinator. Details of the operating budget impact are listed in the attachment as per Report #17574, CR129/2015.	160,108	0

Description	Operating Budget Impacts			
	Estimated Operating Costs	Estimated Operating Costs	Estimated Operating Costs	Estimated Operating Costs
	2017	2018	2019	2020
Software Licenses (\$303,800 contract, 5 year term with 4 annual payments)	\$75,950	\$75,950	\$75,950	\$75,950
Extended Hardware Warranty (note1) (\$132,000 contract, 5 year term)	29,000	31,000	34,000	38,000
Extended Operation and Maintenance (\$80,000 contract, 5 year term)	19,000	20,000	20,000	21,000
Hardware Maintenance (IT)	3,920	3,920	3,920	3,920
Hosting Option - Strategic Mapping Inc. (\$27,200 capital + \$6,800 per year; \$34,000 contract, 5 year term)	6,800	6,800	6,800	6,800
Hosting Option (IT)	15,000	15,000	15,000	15,000
Subtotal	\$149,670	\$152,670	\$155,670	\$160,670
Cell Communications	48,768	48,768	48,768	48,768
WIFI System Costs (IT)	1,000	1,000	1,000	1,000
Subtotal (excluding HST)	199,438	202,438	205,438	210,438
Add: Non-refundable HST	3,511	3,563	3,616	3,704
Subtotal (including HST net of rebate)	\$202,949	\$206,001	\$209,054	\$214,142
Staff Resources (Transit Windsor)				
ITS Coordinator	112,097	114,115	116,169	118,260
Hardware Support Specialist	102,160	109,057	116,169	118,260
Subtotal – Staff Resources	\$214,257	\$223,172	\$232,338	\$236,520
Total Gross Operating Costs	\$417,206	\$429,173	\$441,392	\$450,662
Salary offset due to internal job realignments	(112,097)	(114,115)	(116,169)	(118,260)
Projected Increase in Ridership Revenue	(145,000)	(145,000)	(145,000)	(145,000)
<b>Total Net Operating Costs</b>	<b>\$160,109</b>	<b>\$170,058</b>	<b>\$180,223</b>	<b>\$187,402</b>

**City of London** - The City of London's capital budget summarizes capital spending in 3 distinct areas: "Lifecycle Renewal, Growth, and Service Improvement". The spending in each of these areas is shown for each area of the City of London, alongside the actual spending for the previous year and the forecast spending for the next 3 individual years individually and the following 5 years combined (for a total of 10 years). This allows for the City of London to visually illustrate over a 10-year period the amount of capital funding that will be dedicated toward these 3 distinct areas (i.e. over a 10-year period 41% towards Lifecycle Renewal, 48% towards Growth, and 11% towards Service Improvements). The City of London's strategic financial plan also guides the funding mix for each of these 3 areas of the capital budget.

- Lifecycle Renewal projects maintain the infrastructure that is in place today (i.e. projects that resurface roads, replace roofs and replace equipment) and address the infrastructure gap identified in the City of London AMP. These projects provide the direct linkage towards items identified in the

AMP and allow the City of London to directly and transparently track their spending that is dedicated towards addressing items in the AMP. Lifecycle Renewal projects are to be funded by capital levy and reserve funds, with a reduced reliance on debt (i.e. “pay-as-you-go” funding).

- Growth projects are planned to extend services into newly developed areas of the City (i.e. a road widening to handle additional traffic from new subdivisions). Growth projects are to be primarily supported by development charges and senior government support.
- Service Improvement projects provide a new or improved level of service or address an emerging need (i.e. purchasing property for industrial land). Service Improvement projects are funded by a mix of capital levy and reserve fund, as well as debt and non-tax support, depending on the nature of each specific project.

**City of Waterloo** - The City of Waterloo details spending in 5 distinct areas: “Growth, Rehabilitation, Health & Safety, Legislated, and Strategic” and its AMP includes performance measures such as the 5-year running average of capital reinvestment to replacement value of assets. The financial plan clearly demonstrates those capital projects that are attributable to growth to those that are considered rehabilitation projects, as well as segregating projects related to health and safety, legislation and strategy. This analysis is done both for the first year and for the totality of the following nine years. The financial plan demonstrates for the full 10-year period (spend of approximately \$450 million), both a) the split of spending between the 13 different asset groups (i.e. parks, parking, facilities, storm water management, transportation, sanitary) as well as the split between the construction of new assets (35% of spend), the renewal of existing infrastructure (55%) and non-infrastructure activities (10%).

The financial plan also stipulates the amount of money spent on infrastructure through its annual operating budget (i.e. life cycle costs and operating cost impacts). Approximately 12% of the operating budget of the City of Waterloo is estimated to relate directly to operating and maintaining infrastructure assets, as well as to new existing assets. The City of Waterloo has segregated in their operating budget the costs dedicated to renewing existing assets (\$1.2 million or 0.7%) and the costs to operate and maintain assets (\$21.8 million or 12.3%), as well as reporting the breakdown of this spend among the 13 asset groups.

**Table 8 – Distribution of Operating Budget by Asset Group (thousands)**

Asset Group	Expenditures that Renew Existing Assets	Electricity and Natural Gas	Expenditures to Operate and Maintain Assets	Total
Transportation	\$564	\$0	\$4,864	\$5,428
Sanitary	\$0	\$0	\$1,631	\$1,631
Water Distribution	\$311	\$0	\$2,523	\$2,834
Storm Collection	\$0	\$0	\$445	\$445
Stormwater Management	\$0	\$0	\$953	\$953
Facilities	\$351	\$3,740	\$2,927	\$7,018
Parks	\$0	\$0	\$2,946	\$2,946
Forestry	\$0	\$0	\$789	\$789
Parking	\$2	\$0	\$746	\$748
Fleet	\$0	\$0	\$24	\$24
Fire Services	\$0	\$0	\$165	\$165
Information Technology	\$0	\$0	\$2,243	\$2,243
Cemeteries	\$0	\$0	\$1,561	\$1,561
<b>Total</b>	<b>\$1,228</b>	<b>\$3,740</b>	<b>\$21,817</b>	<b>\$26,785</b>
Expenditure is not related to providing an infrastructure service or is captured in the capital budget				\$150,159
<b>Grand Total</b>				<b>\$176,945</b>

Based on the analysis performed, the City of Waterloo estimated that the operating and maintenance expenditures of \$21.8 million represented 1.4% of the total existing replacement value of the asset group (\$1.6 billion). Also included in the financial plan was the total increase to annual operating and maintenance expenditures (i.e. the operating impact) at the end of the 10-year period as a result of the planned \$156 million in spending on construction of assets over the next 10 years, which was \$7.5 million or 4.2%.

**City of Calgary** - The City of Calgary details spending in 4 distinct areas: “Maintenance/Replacement, Upgrade, Growth, and Service Change”.

**c) Monitoring and Reporting on the Capital Budget**

Monitoring and further reporting on capital projects must continue throughout the lifecycle of the asset. The City must have policies and procedures to support effective capital project monitoring and reporting to mitigate the risk of approving projects without having adequate operating and life cycle funding in place. Effective monitoring and reporting of capital projects on an ongoing basis requires the City to:

- Confirm that a project plan exists that identifies all required resources and milestone work products and verify the project plan is being followed;
- Confirm that the project’s scope has been clearly identified upon completion of final design and that the project stays within scope or that changes to scope have been made consistent with an established process;
- Review project-related financial transactions to support budget review, auditing and asset management;
- Review expenditures, both in relation to the current budget and over the entire project life;
- Review encumbrances and estimates of planned expenditure activity;
- Confirm continued availability and appropriateness of revenue sources identified in the capital budget;
- Confirm the adequacy of cash flow in relation to project requirements;
- Compare results to established measures of performance;
- Report on project status and activities including a comparison of actual results to the project plan and detailing:
  - Percent of project completed and percent of project budget expended;
  - Progress on key project milestones;
  - Contract status information;
  - Revenue and expenditure activity;
  - Available appropriation;
  - Comparison of results in relation to established performance measures; and
  - Highlight significant changes to project scope or costs.

Fundamentally, the City is achieving many of the recommended monitoring and reporting task identified above in leading practices. The current capital status report prepared by Administration provides highly summarized information regarding each project, including approved budget, estimated completion cost, estimated budget variance, estimated completion date, and a brief note where applicable regarding budget variances or identification of reserves impacted by the over/under expenditure.

#### **d) Recommendations**

**#6** - IA recommends that the City incorporate categorization of capital expenditures into its capital projects in order to more clearly link life cycle costs to AMP's and to distinguish between the different types of capital spend being incurred.

**Supplement to recommendation:** This practice would be consistent with leading practices in place at relevant Canadian municipalities and in addition would allow for the development of further performance measures to demonstrate the City's relative progress on its asset management plans. IA notes that within the "Approved Capital Project Details" document there are project types designated for each project (i.e. equipment replacement, growth and capital expansion, infrastructure maintenance, prepaid land development, electrical and street lighting, support systems, rejuvenation, environmental protection).

Based on the categorizations of other municipalities IA believes the City should revisit these categorizations to determine more consistent categories that can be applied across the divisions within their respective departments, and then incorporate analysis of the type of spend across all budgeted and forecasted years as part of more fulsome asset management planning. This will allow for the development of performance measures and also the development of useful trends and expenditure expectations which can be applied to future capital projects. At a high level, if the City were to assess its operating budget and isolate those expenses which relate to the operation and maintenance of assets (similar to the exercise undertaken by Waterloo), the City would then be able to have a general expectation of the reasonable range of total operating cost impacts to expect on a cumulative basis over a given period of time.

**#7** - IA recommends the development of performance measures to illustrate the traction of asset management planning in the City.

**Supplement to recommendation:** One example would be the "5-year running average of capital reinvestment to replacement value of assets" utilized by the City of Waterloo. In order to do this, the City would also need to further refine its capital expenditure categorization as noted in the recommendation above to allow for more transparent and understandable budget reporting and to strengthen the link back to the AMP's.



## 8 – Tracking Detailed Information for Maintaining and Replacing Assets

### a) Policy and System for Assessing Assets and Reporting on Assessments

In order to facilitate ongoing asset management planning and the ability to execute more detailed documents for the next generation of AMP's, the City requires a process for assessing assets in order to appropriately plan and budget for any capital maintenance and replacement needs. In order to achieve this, the City should consider developing a policy to require a complete inventory and periodic measurement of the physical condition of all existing capital assets based on the best practices of that specific asset class. The assessment should be updated on a periodic basis and there should be documentation of the established methods of condition assessment.

Ongoing evaluations are required to determine whether existing assets still provide the most appropriate method to deliver services. Maintenance and replacement plans for assets should be prioritized in accordance with overall goals and objectives to maintain expected service levels. Policies should require custodians to identify and dedicate fees or other revenue sources to help achieve this goal. Sufficient allocation of funds in the multi-year capital plan and annual operations budget for condition assessment, preventative maintenance, repair and replacement of capital assets is critical in order to continue the provision of services that contribute to public health, safety, and quality of life of the citizens.

### b) Illustrative Example of Major Projects and the Roadway Network

Major Projects (MP) and the City's roadway network provide a good example of the importance of this step to the overall continued asset management objectives of the City as well as some of the challenges to take the City from the starting point of its asset management journey in 2016 to a more mature asset management cycle that is directly in line with its budgeting process. Through the funding from the dedicated roadway levy, the average turnaround period on the roadway network has improved from 80 years (with an annual budget of \$9 million) to 20 years (with an annual budget of \$27 million and the aim of addressing 5% of the roadway network annually). However, with respect to data collection needed for sophisticated asset management planning going forward, MP still consider themselves to be in very early stages. The condition assessment data collected in 2014 was MP's first objective look at the road network, and MP is currently working towards scenario modelling, in which they could use data sets and assumptions to model the types of treatment which would allow the roadway network to achieve the targeted 20 year cycle. With this model, treatment types could be altered to find a more optimal cost/benefit mix, which currently is not be achieved due to the limited data collection. Put another way, in terms of the asset management planning for the roadway network there is still a significant amount of professional judgement required and the move towards more data-driven (or scientific) judgement will result from complete up-to-date maintenance data and more condition assessment data sets for comparative modelling.

### c) Recommendation

**#8** – IA recommends that at least every four years, to coincide with the proposed multi-year budgeting cycle currently being contemplated, Administration should provide a "plain language" report on capital assets to the SPC on Finance and City Council.

**Supplement to recommendation:** This could be accomplished by virtue of updates to the master AMP that the City anticipates developing subsequent to completion of individual AMP's. Currently this information is provided by individual service areas annually, however a consolidated report on the City's assets as a whole would provide the relevant information in one place for each asset class. The report would describe:

- Condition ratings compared to established policy standards and by area/ward, asset class, and other relevant factors;
  - Indirect condition data (e.g., number of pot holes, water main breaks, sewer back-up complaints etc.);
  - Replacement life cycle(s) by infrastructure type;
- Actual expenditures and performance data on capital maintenance compared to budget, including long-term trends over the prior five years.

## Appendix A – City of Ottawa Comprehensive Asset Management (CAM) Prioritization Tool

### CAM Prioritization Tool Process Flowchart

