



State of the Infrastructure

2011

STANDING COMMITTEE ON FINANCE

AGENDA REPORT-BACKGROUND ATTACHMENT

1 Introduction

- 1.1 All modern economies are sustained by an extensive infrastructure that includes roads, and other transport systems, water supply, waste disposal, energy, telecommunications, recreational networks and property. Infrastructure supports the fabric of modern living which is taken for granted until something fails or no longer provides the expected services. The following quote is from the Canadian Society of Civil Engineering President in reference to the tunnel collapse in Montreal earlier this year,

The state of Canadian infrastructure has once again become front page news. On the morning of Sunday, July 31st, 2011, a section of the trellis-like ceiling structure of the Ville Marie tunnel in downtown Montreal collapsed. Fortunately the collapse occurred on a Sunday morning; with minimal traffic on the road, there were no injuries. The failure was not of the main tunnel, but of a transition in the roof from the dark tunnel to the bright sunlight. Irrespective of the 'good news' that this devastating failure did not cause any human casualties, the reality of the state of Canadian infrastructure is again forefront with the public. Civil Engineers in Montreal have expressed their opinions on the reasons behind the collapse. This structural failure is similar to other recent bridge failures elsewhere in North America. Past- President of the CSCE, Dr. Saeed Mirza, P.Eng., FCSCE has been quoted as saying "We must change the current practice of **DESIGN, BUILD and FORGET**, and design and construct all infrastructure facilities for sustainable performance over the designated service life, considering all life cycle costs (including environmental, economic, social, etc.) with regular maintenance and any required rehabilitation and partial replacement when needed." There will be significant costs associated with this failure, including the need to divert capital costs from infrastructure maintenance projects to clean up the debris and then to rebuild the collapsed section of the tunnel. In addition to the direct costs of the repair, there are also the indirect costs. Traffic must now be diverted to adjacent roads, thereby increasing the wear and the volume of traffic on those roads, which may lead to network breakdown, and generating longer traffic queues and increased user costs. Increased traffic volumes on roads not designed to serve such traffic volumes will result in driver impatience, possible road rage and an increased risk of vehicular accidents."

CSCE President, Mr. Randy Pickle, P. Eng., FCSCE, FEC

The quote above provides us with an understanding that if neglected infrastructure will fail. Canadian municipalities are experiencing problems with maintaining and building infrastructure as constrained budgets and increased costs for services continue to affect the serviceability and life of our infrastructure. In Nov 2011 the CBC ran a special report called the "Big Fix – Falling Apart and Falling Behind" that talks about the state of Canada's infrastructure and what's required to fix it. Included in the report is an interactive calculator that gives the average Canadian the tools to try and

shrink the Canadian municipal infrastructure gap (\$238,600,000,000) to zero dollars, without running a surplus using tools from the Federal, Provincial and Municipal levels. The infrastructure calculator can be found on the following web site:

<http://www.cbc.ca/news/interactives/infrastructure-calculator/>

- 1.2** A key element for St Albert is the ability to understand what our needs are for growth, re-investment and lifecycle. Growth needs are the investments required to support the growing economic and social activities of the community. Re-investment needs identify what is required immediately to bring assets to an acceptable condition. Finally lifecycle costs are associated with the long term repairs and capital improvements required to keep assets functioning at an acceptable level.
- 1.3** In reality the City does not have the funds to address all the growth, re-investment and lifecycle needs for all of our assets immediately. Our City like other municipalities across Canada must prioritize our work and identify where our dollars are going to be utilized. Infrastructure (Asset) Management provides this means to prioritize in order to meet our level of service using key elements:
- a.** Taking a life cycle approach to infrastructure;
 - b.** Developing cost-effective management strategies for the long term;
 - c.** Providing a defined level of service and monitoring performance;
 - d.** Managing risks associated with asset failures;
 - e.** Sustainable use of physical resources'; and
 - f.** Continuous improvements in asset management practices.

A formal approach to the management of infrastructure assets is essential in order to provide services in the most cost-effective manner and to demonstrate this to customers, investors and the stakeholders.

- 1.4** This report is aimed at providing information on how our infrastructure is functioning and present the current conditions and programs being implemented to ensure that our infrastructure is functioning the way it was intended.

2 Background

2.1 Phase 1

- 2.1.1** In 2003, the City of St. Albert conducted an evaluation of the City's municipal infrastructure and capital assets through a consulting firm. The City's goals were to determine the value at that time of the current infrastructure such as buildings, parks, trails, water systems, wastewater and storm infrastructure, roads, traffic signals, sidewalks, bridges, transit vehicles and public works equipment and provide required re-investment needs over the assets life cycle. A full inventory was conducted on all infrastructure and capital assets greater than \$5000 providing information of age, remaining effective life, condition,

functionality and utilization of the asset. The report, even though it is nearly nine years old still provides the City with the base of understanding what the infrastructure need is and how we are to move ahead with continuous improvements.

2.2 Phase 2

2.2.1 In 2005 the City performed another study to further understand the state of our infrastructure by performing a physical infrastructure assessment. This study looked at the physical failure component of infrastructure or in other words a risk based Life-Cycle approach to our infrastructure. The study took a page from the City of Edmonton that utilized their model and modified it to be a “Made for St Albert” approach.

2.2.2 The study identified assets risks and displayed those risks associated with the assets in their modeling programs giving us a priority of assets that required attention within the next 10 years. These assets were identified as Hot Spots and are as follows:

- a. The Road Network- main contributors to the declination of the road network are the roads built and designed as a full-depth asphalt. Full-depth pavement roads are in worse condition today than other types of roads;
- b. Sidewalk Network - Identified a rebuilding concern for the sidewalks. This costly rehabilitation in sidewalks can be offset by short term improvement such as mud-jacking and grinding;
- c. Local Sanitary – This network was identified as requiring only a modest increase in spending to keep its severity from increasing over the next 10 years; and
- d. Large Buildings.

2.3 Future – “Continuing the Journey Forward” Infrastructure Management

2.3.1 The City’s infrastructure is in a constant state of growth, decay and refurbishment. There is no end state when it comes to planning the infrastructure required or currently being used hence “Infrastructure Management is a Journey not a Destination.” The total management spectrum includes three levels of planning; strategic, tactical and operational. The City’s organization structure has Infrastructure and Capital Planning Branch (ICP) addressing the first two (Strategic and Tactical) planning processes with the Asset Management group in Public Works addressing concerns in the Operation planning process for buildings and the vehicle fleet.

- a. **Strategic** – Looking forward to a 10-25 horizon for financial planning purposes but may also go beyond that timeframe to properly assess optimum lifecycles of assets. The main components are mission statement, review of the operating elements that affect the organizations activities, identifying and evaluating of strategic options and stating a clear direction, goals and desired outcomes. (Infrastructure Review, Master Plans).

- b. **Tactical** - Translates the broad strategic goals and plans into specific goals and objectives to a particular portion of the organization. This level allocates resources to achieve the strategic goals through defined levels of service. (10-year capital Plan).
- c. **Operational** – Provides detailed action plans and information with a 1-3 year outlook (short term). Components of the operational plan should include; identification of priorities arising from the tactical plan, defined level of service, be realistic and achievable, contains appropriate performance measures and promotes efficient and innovative service delivery. (Annual Budget).

2.3.2 The diagram below (Figure 1) provides the infrastructure management cycle and how the three levels of planning constantly circulate with constant monitoring and review.

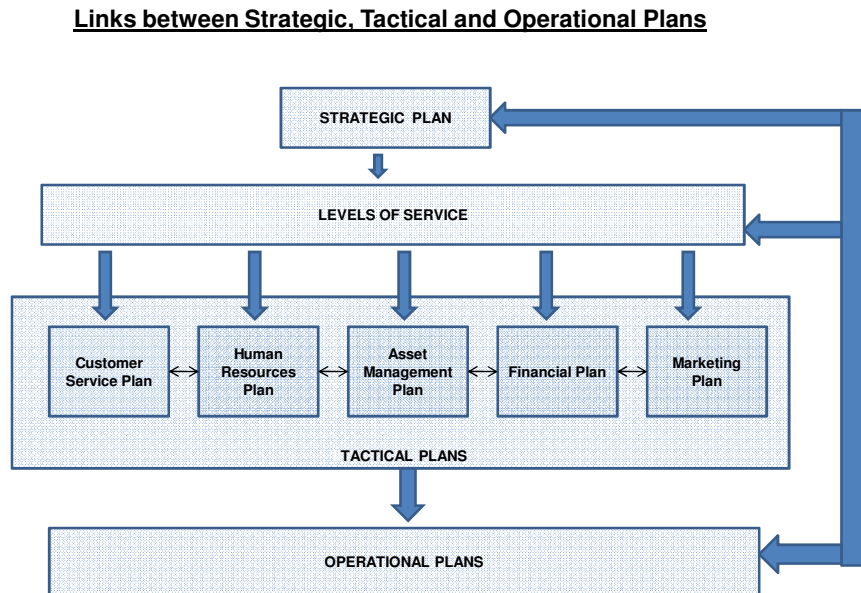


Figure 1 – Links between Planning

- 2.3.3 Infrastructure management has many benefits that relate to accountability, service management, risk management and financial efficiency. The savings by implementing infrastructure management can be seen through the following:
- a. increased efficiency – reduction of out of pocket expenses;
 - b. cost avoidance; and

- c. cost redirection – increase cost effectiveness with the right investment in the right solution at the right time during the life cycle of the asset.

2.3.4 The difference on how money is spent and directed to our infrastructure follows two paths. It is either operational or capital. Operational expenses are directed towards operations (consumables, utilization) or maintenance (deterioration minimization), both operation and maintenance are either focused on direct provision of service or the retention of existing services. Capital expenses on the other hand are directed towards renewal (asset replacement) or new (additional assets) and are focused on retention of existing services or new and/or expanded services. Both operational and capital share the retention of services.

2.3.5 Infrastructure management aims to look at the various options available for the future and balance these options with the expectations and costs. Infrastructure Management adds the preventive maintenance aspect to the life cycle of assets. The advantage adding preventive maintenance to the life of an asset is demonstrated in the diagram below.

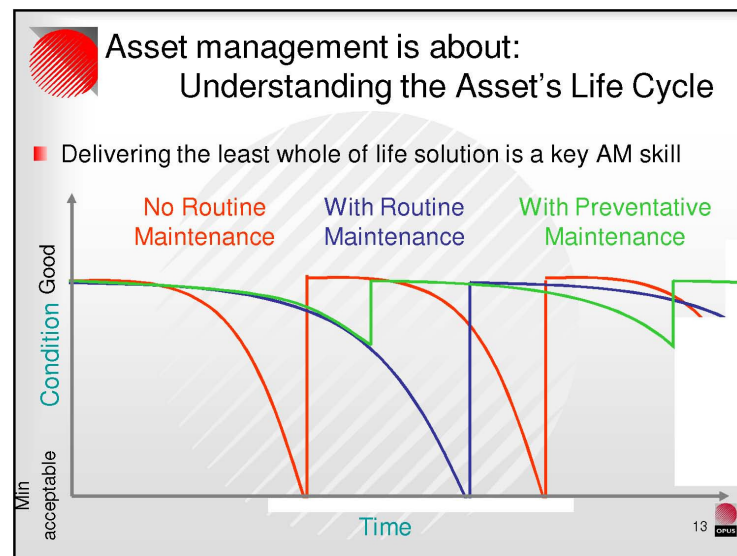


Figure 2 – Preventive Maintenance

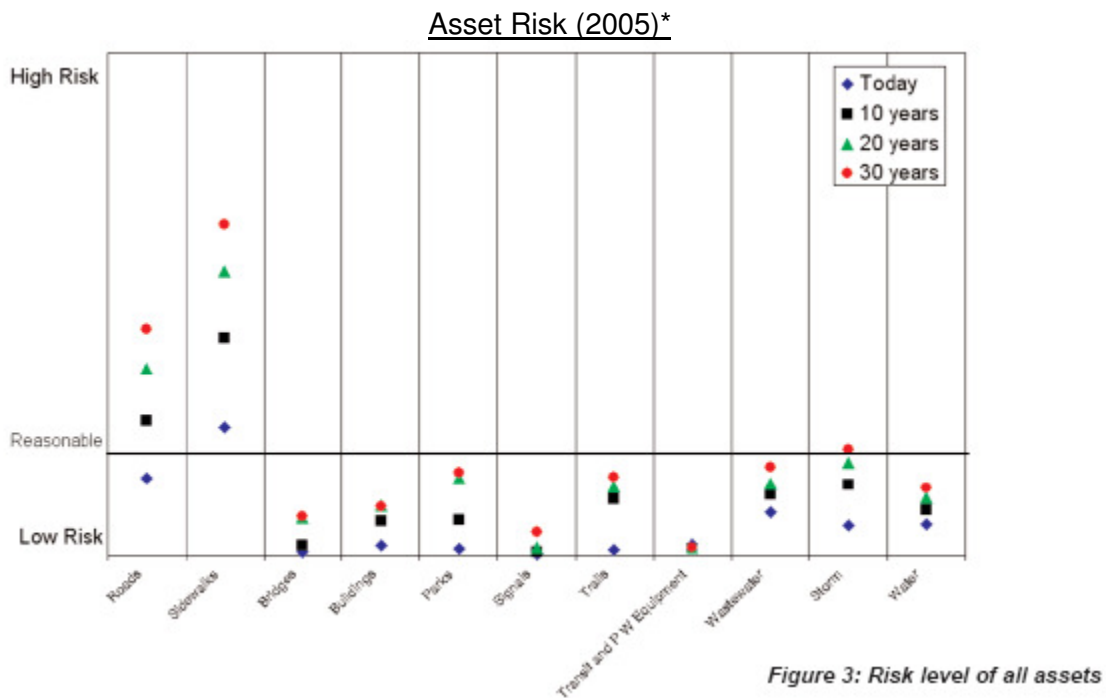
2.3.6 Infrastructure management utilizes processes that are aimed at continually improving the way we maintain and plan for our assets. The objective of infrastructure management is to provide the desired level of service in the most cost effective manner for the present and future to the owners of the asset in a transparent and informed manner. This means balancing the cost of service with the level of service expected. Continuous improvements in asset management relate to governance (goal, objectives, policies, legislation) and inventory/condition (inventory and measured conditions) of our assets and are

part of the total process of asset management that include levels of services, option identification, decision making and implementation.

3 Current Situation

3.1 **Prioritization**

3.1.1 The 2005 study examined the City's assets and classified them with letter grades. The 2005 results were plotted on the chart below identifying roads, sidewalks and storm/waste water as the highest risk assets.



* - Chart indicates findings from 2005 does not reflect current situation in 2011.

Figure 3 – Risk Chart by Asset Category

3.1.2 As of 2010 the City has made progress in several of the high risk areas by utilizing the information provided in the two studies. The City addressed assets according to the prioritization set by the 2005 study. Roads, sidewalks, utilities (water, wastewater, storm water), buildings and bridges have all been identified as our main areas of concern.

- a. Roads – Applying the Road Matrix evaluation and inspection process the City has been able to increase its performance levels on its roads over the years. This system identifies roads that require overlaying or those slated for rebuild at a later date. The availability to have funds to address road issues is integral in keeping our road safe and functional for the public. Chapter 3.2 will provide a more detailed explanation on the road program.

- b. Sidewalks – In 2010 the City conducted a second assessment (completed in 2011, first one completed in 2007) to confirm where the City's sidewalks are in terms of condition and maintenance. Assessing the sidewalks allows the City to identify and prioritize work over the next three years. Total network sidewalk assessments are conducted in a three year cycle. Identifying the hazards associated with our sidewalks and being proactive with repairs should limit the overall liability issues against the City. Chapter 3.4 will provide a more detail explanation on the sidewalk program.
- c. Utilities – The City conducts closed circuit television (CCTV) camera inspections of its wastewater and storm networks yearly. These inspections assist in identifying the structural condition of the pipes which are then prioritized for repair. It is imperative that we identify the condition of the pipes early as we aim at avoiding catastrophic failures which end up being the most expensive method of repairs. Repairs are generally completed either through spot repairs, open trenching or relining. Chapter 3.5 will provide a more detailed explanation on the City's utilities.
- d. Buildings – In 2011 a study was started that will consolidate a long term plan for the rehabilitation of all City owned buildings (excluding Servus Place). Managing our buildings on a more global scale can lead to a number of improvements in the current process including multiple tendering opportunities and overall reduced costs. The first stage will be to review the existing condition and generating a long term plan. This study will be completed in 2012. Chapter 3.6 will proved a more detailed explanation on City owned buildings.
- e. Bridges – The City implemented an annual bridge inspection program in 2010 that will provide condition reports, recommend repairs and rate our bridges based on the Province's Bridge Inspection Program. This program will allow the City the information to proactive in planning repairs and replacement of our bridges. Chapter 3.3 will provided a more detailed explanation on the City's bridges.

3.2 Roads

- 3.2.1 The City is provided yearly updates on our road network that is placed onto the Road Matrix Program for analysis. Using a 3-year cycle, data is collected along our 756 lane-kilometres of Primary Highway Connectors, Highway, Arterial, Local and Gravel Roads. Each year a third of the City's road network is collected and the data is used to identify the present status of the pavement under four performance indicators: Riding Comfort Index (RDI); Surface Distress Index (SDI); Structural Adequacy Index (SAI); Pavement Quality Index (PQI). In 2010 the ICP Branch began testing local road structural adequacy with the Falling Weight Deflectometer (FWD). This added information provides a well rounded condition of the road for further analysis.

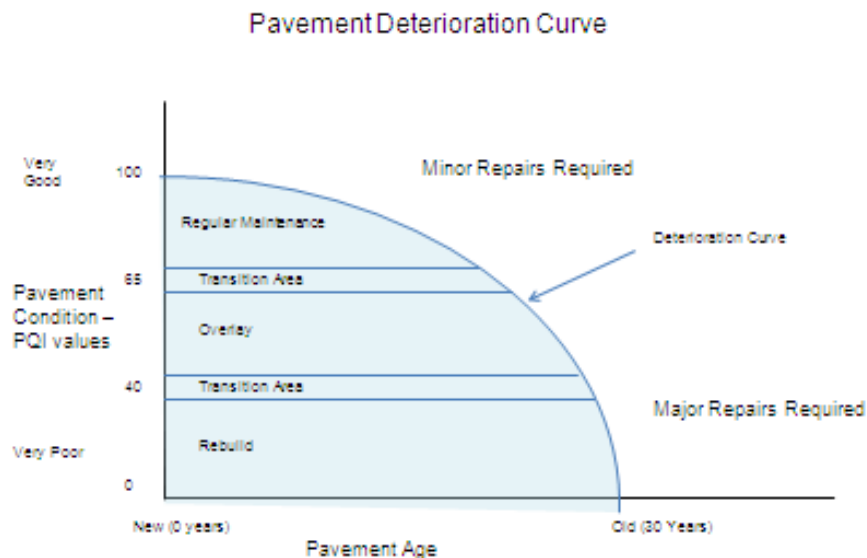


Figure 4 – General Deterioration Curve

- 3.2.2 The prime indicator for rehabilitation or reconstruction of the City's roads is the PQI which, roads falling under a PQI of 55 for local road, 60 for collectors and 70 for arterials will indicate the need for remediation. Originally triggers were set at 50 across the board but this resulted in some roads to fall below ideal levels identified on the deterioration curves therefore 70, 60 and 55 have been used over the last two years. These triggers are being re-evaluated and will be adjusted as we further define the models/programs (deterioration curves). The performance indicators are all based on a numerical system from 1-100 with 1.0 being a poor or impassable road and 100 being a newly constructed paved road. Finally the PQI's are compared with the numbers collected through the FWD testing to confirm if overlaying can take place. Increase values in PQI (or the overall condition of our roads) could only be achieved with the funds to undertake the work for overlaying and reconstruction. Over the last 5 years the funds identified for this work have increased significantly. A breakdown of the 2011 PQI results is shown on the following table.

Network PQI (2011)

Functional Class	Present Status			
	PQI	RCI	SDI	SAI
Highway	84.6	75.8	74.9	84.6
Arterial	82	65.9	80.4	86.1
Collector	78.9	60.7	73.6	91.6
Local	73.5	58.4	75.9	91.2
Entire Paved Network	77.1	62.0	76.3	88.3

Table 1 – Current Network PQI (2011)

- 3.2.3 To be able to repair roads at the right time and with the right corrective measure will reduce the overall cost of reconstructing the total road somewhere in the future. The City's Capital Plan identifies several areas where funding is directed to either overlaying or rebuilding of roads. The overlay program provides a new asphalt overlay to sections of roads that have not crossed the threshold where a total rebuild is required. Overlaying is the least costly repair method that addresses the serviceable life of a road. The overlay program is broken into Arterial and Collector/Local Roads. It is the aim of this program to identify roads early for overlaying as delaying this work will see these roads pass the threshold where only a total rebuild will rectify the integrity of the road. The capital plan also identifies funds for road reconstruction broken into collector and local roads. The reconstruction program is managed by identifying a design in one year with construction commencing in the next. In 2011 the City reconstructed the collector road Falstaff Avenue. In 2012 a local road will be reconstructed and a collector will be identified for design.
- 3.2.4 In 2011 our overlay program had challenges when three road sections failed as contractors began the milling process. As a result two of the roads were completely rebuilt (Dufferin and Dalhousie) and the other road (Deerbourne) was repaired in the sections that failed. Numerous reasons as to why the roads failed include soil conditions, construction of the road and high ground water level due to the volume of rain the City experienced in the early summer of 2011. Further studies are being conducted in the Deer Ridge and Erin Ridge areas which will include structural data of all locals (a program started in 2009). Engineering will also be contacting the City of Red Deer which also experienced a number of road failures in its overlaying program (as we had in Deer Ridge).
- 3.2.5 The following charts and tables provide some historic information in regards to PQI and funding. It should be noted that the increase of our PQI in 2011 is a result of refinement in our Road Matrix program which is now including more data and information that is more St Albert centric rather than North American based.

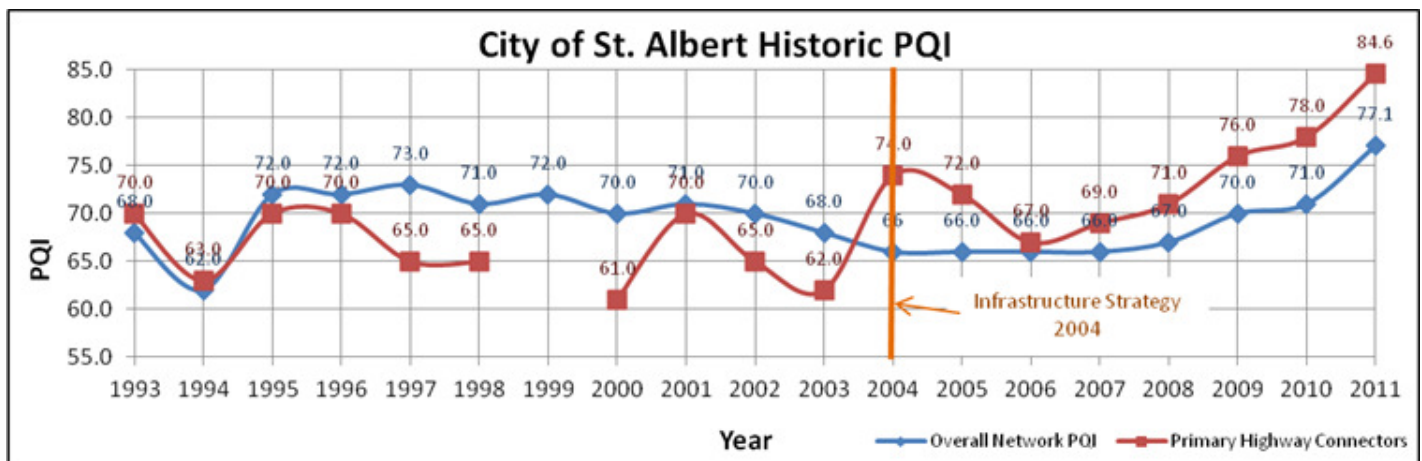


Table 2 – Historic PQI (City Wide Road Network)

Local/Collector Overlay Funding (2005-2013)

Year	Amount (\$)
2005	129 000
2006	300 000
2007	420 000
2008	480 000
2009	1 800 000
2010	2 100 000
2011	2 170 000
2012	1 793 000
2013	1 660 000

Table 3: Funding by Year (not necessarily approved at the time of this report)

Arterial Overlay Funding (2005-2013)

Year	Amount (\$)
2005	300 000
2006	400 000
2007	720 000
2008	960 000
2009	1 950 000
2010	2 000 000
2011	2 140 000
2012	1 730 000
2013	1 930 000

Table 4: Funding by Year (not necessarily approved at the time of this report)

Local Reconstruction Program (2005-2013)

Year	Amount (\$)
2005	0
2006	0
2007	0
2008	0
2009	1 000 000
2010	1 150 000
2011	2 140 000
2012	1 730 000
2013	1 930 000

Table 5: Funding by Year (not necessarily approved at the time of this report)

Collector Reconstruction Program (2005-2013)

Year	Amount (\$)
2005	0
2006	0
2007	0
2008	0
2009	1 200 000
2010	1 380 000
2011	0*
2012	150 000
2013	1 500 000

* - budget was a carry over from 2010.

Table 6: Funding by Year (not necessarily approved at the time of this report)

- 3.2.6 Intersections throughout the City have shown signs of deterioration after a short life span; this is more prominent in the higher volume roads (St Albert Trail, Boudreau, Giroux, McKenney and Hebert). The ICP branch conducted an intersection study in 2011 that looked at options (material and construction techniques) to improve the life span of our intersections especially along St Albert Trail. Options provided in the study will be reviewed for application in 2012 as the intersection at Boudreau and Bellerose has been identified for rehabilitation.

3.2 Bridges

- 3.3.1 In 2010 the City awarded work for the initiation of a formalized Bridge Inspection Program that would care for all City bridges. This 3 year program provides the City with current structural evaluations on all our bridges, recommend repairs and identify safety issues associated with each bridge. The

first inspections were completed in 2010 and the second year of inspections were completed in the Fall of 2011. This inspection program is based on the Alberta Transportation Bridge Inspection Maintenance System (BIMS). It is a system that has been proven efficient and easily managed. The system will assist in long term planning and replacement of all our bridges while allowing the City to monitor the safety and functionality of the bridges.

3.3.2 The City has a total of 16 bridges of various types. Ten bridges are roadway bridges with five of those bridges being acquired in the annexation in 2007 (two are culvert bridges) the remainder are 6 pedestrian bridges. Break down of the bridges are as follows:

- a. The two bridges located along St Albert Trail were refurbished in 2009/10. These bridges span crossings over the Sturgeon River (BF72954) and over Sir Winston Churchill Drive (BF 75215) they were initially constructed in 1982. They are in good condition but monitoring of one pier will need to take place.
- b. The Bridge located along Perron Street (BF00506) was constructed in 1985 and was refurbished in 2008. The refurbishment addressed the build up of chloride which was above the threshold level. It is in good condition and has an expected service life of 30 years.
- c. The Boudreau Road Bridge that spans the Sturgeon River was refurbished in 2004. This bridge is in good condition.
- d. The opening of Ray Gibbon Drive also has a bridge along its route. The bridge was built in 2004. No issues with this bridge.
- e. Located along RR260 and north of Villeneuve Road is a bridge culvert located that was constructed in 2004 by Sturgeon County prior to the annexation in 2007. Inspected in 2005 it is in good shape. The second culvert is located to the north of the City (2.16km from the Villeneuve Road and St Albert Trail Intersection) just west of St Albert Trail that provides access to a farm. This culvert is in good condition.
- f. Bridge along Villeneuve Road (BF 00106) is also in good shape. Minor maintenance needs to be completed around the bridge.
- g. Bridge located along the extension of Giroux Road (Twp 540A) and crossing Carrot Creek is a treated timber bridge built in 1952. Work was completed in early 2010 to repair serious rotting conditions that severely weakened the bridge weigh load capacity and caused safety concerns with the structural integrity of the bridge. The cost of the repairs was \$59 000 and the bridge has now been reassessed and has the designed weight load capacity posted (28-37-54). Its

functional life has been extended for 10 years and will need to be replaced in 2021.

h. Bridge located along Meadowview Drive (BF 06987), was built in 1957. In 2010 concerns over the structural integrity of the bridge were raised. Upon the completion of an inspection and identified repairs the City completed the required work in 2011. As of August 2012 the bridge had its posted weight limits as per its design. This bridge will need to be placed on the 10-year capital plan for replacement in 2022.

i. In 2012, 4 pedestrian bridges are scheduled to be refurbished. The 4 bridges that will be refurbishment in 2012 are as follows:

Berrymore Walkway;
Braeside Ravine Walkway;
McKenney Walkway; and
Oakmont Walkway.

j. The last two walkway bridges are identified as:

Tache Walkway Bridge (Children's Bridge)– Repairs were completed in 2005. Bridge is in good condition. Recommended we perform an investigation on the tension bars.

Erin Ridge Walkway – After being repaired in 2010 the bridge was reopened and is in good condition.

3.3.3 The bridges in St Albert are in good condition overall. The two standard timber bridges we annexed in 2007 are repaired and will need replacement in the next 10-15 years. As we are continually looking for ways to improve our programs ICP is looking at options to extend the life of our bridges by looking at the possibilities of implementing preventive maintenance programs such as washing, sealing and chip sealing. The annual inspections provide our City with a good proactive understanding on the condition of our bridges and to be able to identify problems ahead of time in order to plan accordingly.

3.4 Sidewalks

3.4.1 The City has approximately 455km of concrete sidewalks and 45km of asphalt trails. In 2010 the City conducted an assessment of our sidewalks in order to plan the next three years of rehabilitation, repairs and deflection removals. Total network assessments are planned on a three year cycle with the main objectives of the assessment is to identifying public safety concerns, understanding a "reasonable" level of serviceability, identifying the needs of sustainable assets that do not require excessive future works and/or maintenance and attainment of the best value for the tax payer for any work associated with sidewalks.

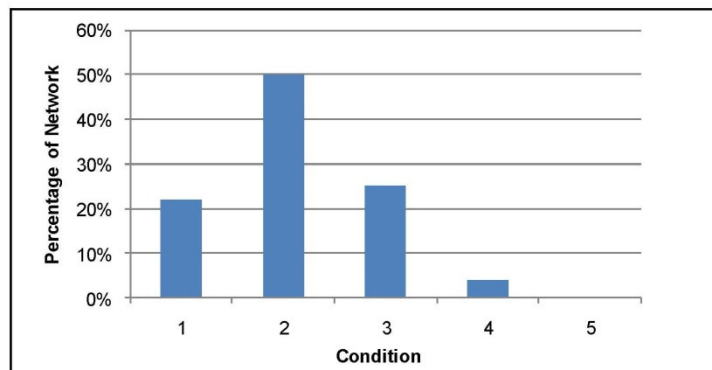
- 3.4.2 The City's sidewalk and trail networks are in moderate to good condition. The condition distribution reflects what would be typically expected for a relatively new network that is starting to age. A large proportion of the network has been rated as being in a good condition, however it must also be noted that there are some sections that are in poor to very poor condition. The table below provides a condition rating based on neighborhoods. The ratings range from 1 which is the best to 5 the worst.

COMMUNITY CONDITION RATING DISTRIBUTION

Condition Rating	Communities
1	North Ridge, Erin Ridge and Oakmont
2	Deer Ridge, Kingswood, Inglewood, Woodlands
3	Lacombe, Pineview, Forest Lawn, Heritage Lakes and the Downtown
4	Sturgeon and Mission
5	Braeside and Grandin

Table 7 – Distribution by Community (2010)

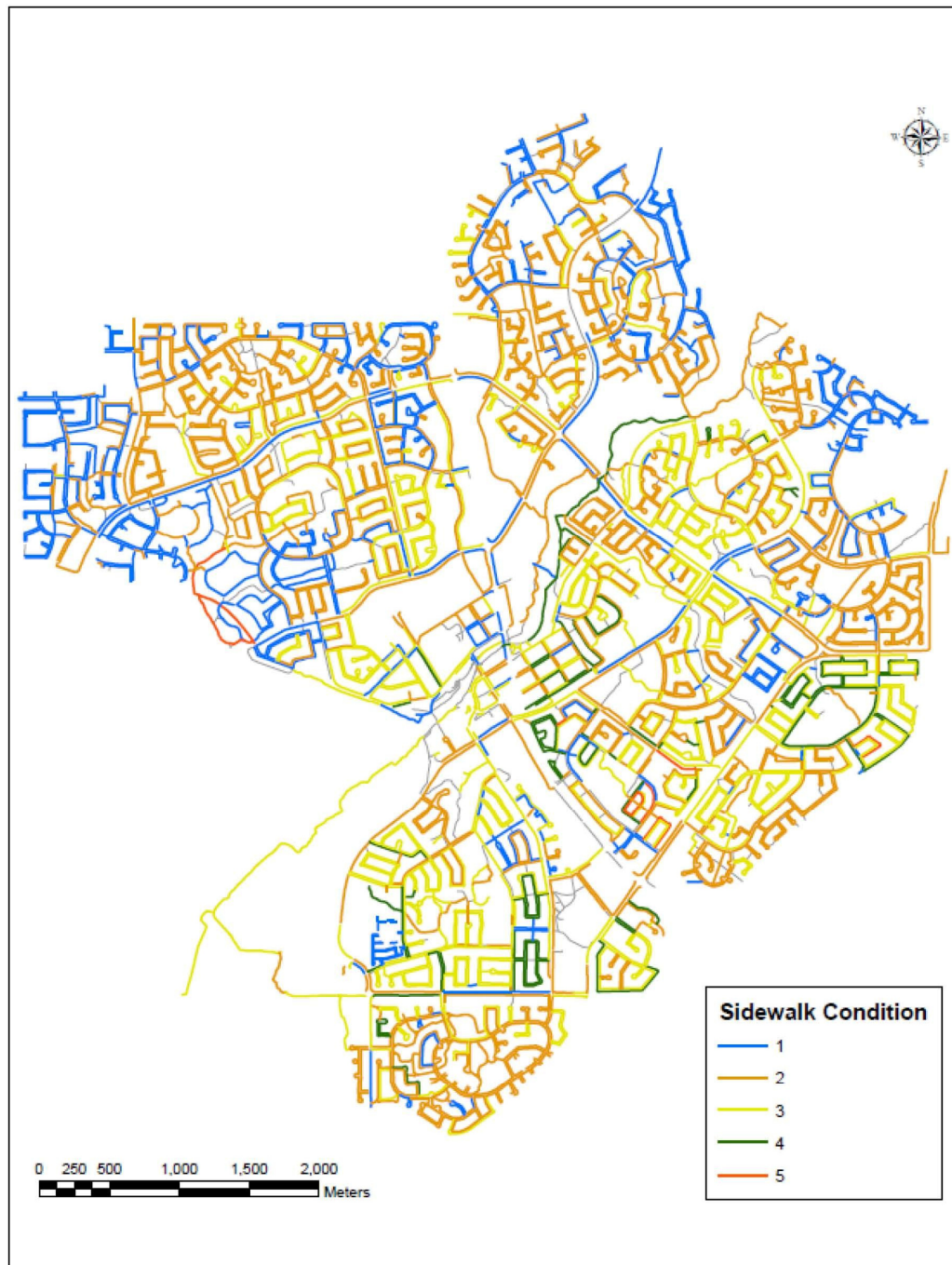
- 3.4.3 The table below provides the break down of conditions City wide.



SIDEWALK CONDITION DISTRIBUTION

Table 8 – Distribution by Condition (2010)

3.4.4 The following map identified the condition of the sidewalks based on the assessment:



CITY OF ST ALBERT SIDEWALK CONDITION RATING DISTRIBUTION

Table 9 – City Wide Condition Map (2010)

- 3.4.5 In 2011 the City completed 1484 cuts to remove deflections in the sidewalks (tripping hazards). This cost effective process has been used by the City since 2008. Below are examples the deflection removal.



Figure 5: Above
Tripping Hazard Before Cut



Figure 6: Above
Both Pictures show completed state of Sidewalk Panel after Cut

3.5 Utilities

- 3.5.1 The City has a various number of utilities.

Water - 322km of water lines, 4 pump houses, 3 reservoirs, 1597 fire hydrants.

Storm – 259 km of storm lines (includes culverts), 3372 catch basins, 21 storm water ponds, 42 outfalls and 10 storm grit separators.

Wastewater – 280 km of sanitary lines, 12 lift stations (includes three private and 1 Capital Regional).

- 3.5.2 The primary method of completing underground network condition assessments is through the use of closed circuit television (CCTV) camera inspections and reports. The CCTV camera records the features inside the pipes while traversing through it from one manhole to the next. As the field recording is being performed, the features inside the pipe are assessed and defects are noted. There are numerous defects that are recorded such as:

cracking, fractures, broken pipe, deformed pipe, holes, collapse pipe, joint displacement, open joint, surface damage spalling and surface damage wear. In 2011 our CCTV inspection program videoed 25.8 km of pipes in our sanitary network and re-inspected 12.5 km of sanitary pipes. To date we have covered approximately 57% of the wastewater collection system and 22% of the stormwater collection system has been inspected.

- 3.5.3 A rating system is used to prioritize all the work required that ranges from 1 (good) to 5 (poor) see table below.

Pipe Inspection Rating Guide

Rating	Implication	Action
0	CCTV survey failed	Re-inspect
1	No structural condition problems	No rehabilitation required (ongoing monitoring and routine maintenance only)
2	Some structural deficiencies noted	No rehabilitation required (ongoing monitoring and routine maintenance only)
3	Structural condition showing deterioration	Some rehabilitation or maintenance required subject to budget availability
4	Structural condition is near failure	Rehabilitation or maintenance required
5	Structural condition has failed	Immediate rehabilitation or maintenance required

Table 10 – Pipe Inspection Rating

- 3.5.4 In 2010 \$4.5M was estimated as the funding required to complete all known rehabilitation work for sanitary lines alone with \$1.1M needed to address all rating 5 works. Capital work in 2011 was tendered with the intent to complete 4.3km of Cured-In-Place Pipe (CIPP) lining which would address 14% of all known pipe problems in the City. The work completed in 2011 looked after over half of the Rating 5 problems in the City. The CIPP program will continue to address the concerns with the sanitary lines in priority annually.
- 3.5.5 The reason to identify repairs soon is it to avoid catastrophic failures in our underground pipes which would results in performing costly open cut repairs. Implementation of repairs can be planned ahead of time. If we can identify the condition of the pipes and implement repairs such as Cured-In-Place Pipe (CIPP) lining we avoid costly repairs and minimize surface disruption while limiting negative impacts on traffic and public safety. If left until catastrophic failure, these costs could easily exceed \$30M in open cut repairs, so timely rehabilitation is preferred.
- 3.5.6 Havenwood Pond was completed in 2011. The scope of the work was to enhance the surroundings of the pond to enable the pond to retain a proper level of water year round.

- 3.5.7 Drainage issues throughout the City have been identified and this year a number of projects were started to help address the issues. The flooding in Oak Vista Drive was designed and construction started in November 2011 with the majority of the work to be complete in 2011 and the final landscaping to finish in 2012. Oasis Court had the design work initiated in 2011 with construction to begin in 2012.
- 3.5.8 For 2012 work will be initiated for repairs and rehabilitation includes 9-10 outfalls (to address safety and structural integrity issues), addressing flooding concerns in various locations throughout the City and the closing of water networks (closing loops) in two areas of the City. Mission Avenue reconstruction will begin in 2012 that will address waste and storm water issues in the area.

3.6 Buildings/Structures

- 3.6.1 Currently buildings are managed through the Asset Management Branch in Public Works. The average age of the buildings is 23 years which is relatively young in comparison to other municipalities. The total number of buildings currently held by the City is 69 from small cold storage buildings to the larger more complex buildings such as St. Albert Place.
- 3.6.2 The Asset Management Branch conducts inspections and life cycle reports. The staff inspections include complete listings of the following; defects and/or areas where either work is required immediately or conditions that need to be addressed with future action, identify what can be completed within years budget, advise tenants of actions they are responsible for any recommended actions required. These future recommendations then go onto either a business case for capital approval or are included in the operating budget.
- 3.6.3 Infrastructure and Capital Planning Branch will be implementing a study to consolidate work and conditions of all owned City building in 2012. This study will provide the City with a rehabilitation strategy for all City buildings. Initial meeting with stakeholder began in October 2012 and the project will continue into 2012.
- 3.6.4 In 2010/11 the ICP conducted a study on the structural integrity of the barrier wall that is located along St Albert Trail. The wall runs along the east side of St Albert Trail from Hebert to Sturgeon and the on the west side of the St Albert Trail from Giroux to Villeneuve. The study was initiated after numerous reports of planks from the wall had fallen down. The recommendation from the report was to commence repairs along the wall immediately to address and then schedule in the 10 year Capital a full replacement of the wall.

3.7 Traffic Signals

- 3.7.1 As of 2011 the City has 52 fully signalized intersections. In addition the City also has: 21 Pedestrian ½ signals; 8 Pedestrian amber flashing crossings; 3

Fire Hall Flashers; 7 school zone flashers; and 2 solar powered school zone powered flashers.

- 3.7.2 Additional equipment/technology used at certain signalized locations include:
- a. Video Vehicle Detection (Cameras) – in 23 locations;
 - b. Wireless Radio Communications – in 22 locations; and
 - c. Pedestrian Countdown Timers - in 13 locations.

- 3.7.3 In 2011 Transportation focused on the installation of Uninterrupted Power Supply Systems (which all traffic signals to operate under temporary power outages). In 2012 the City will install these systems in 27 locations.

- 3.7.4 As of 2011, a number of our traffic signals and cabinets are approaching the end of their life expectancy. Older cabinets have presented problems with maintenance in operational failures and there are limitations to improvements which may be made at these sites. Many intersections are operating on 25+ year old traffic signal cabinets (as of 2011 there are 14 cabinets in this category). These cabinets are old standard style cabinets that have limiting capability in the signal operations, such as less phases to placed in use and limits to infrastructure capable of running within the cabinet itself.

- a. The City has undergone the start of a program to upgrade signal cabinets where additional phasing or traffic movements have been recognized through the Traffic Signal-Timing for St Albert Trail and Boudreau Road corridor systems.
- b. To date there have been 5 traffic signal cabinets upgraded through a joint effort between the Capital Transportation Management System and Traffic Signal Maintenance Program. In 2011 and 2012 9 more cabinets will be upgraded.

- 3.7.5 The Engineering Department, as of 2011, is going to be performing multiple Warrant Studies at intersections. This creates cost savings in the Transportation Management Program, as it has been consulted out in the past. It will also provide an opportunity for the City to prioritize signal placement and create 3 and 5 year plans through estimating traffic volume growth.

4 Asset Value

- 4.1 The following pie chart clearly indicates the percentage breakdown of each asset when compared to the total inventory owned by the City. Clearly indicated is the huge percentage that underground utilities are of the total at 62%. If you add our road and sidewalk networks with the utilities then the total of these assets reaches 85% of our whole City owned infrastructure.

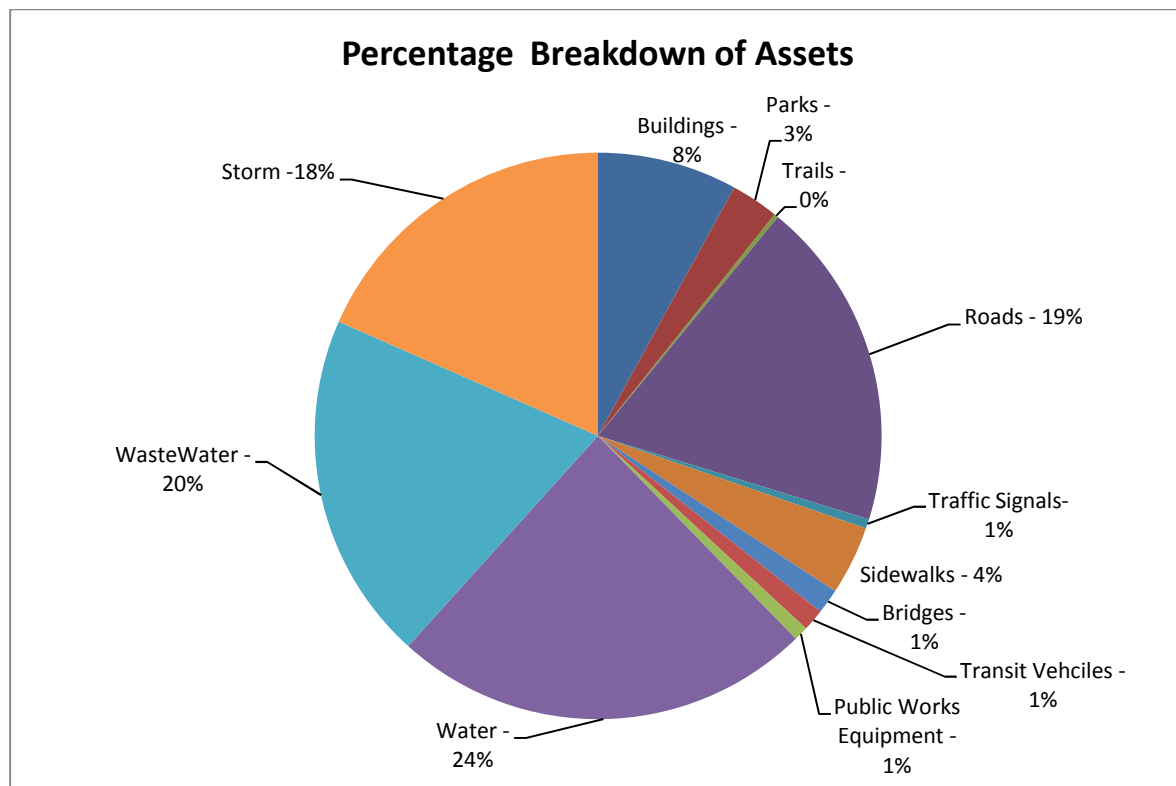


Figure 7 – Asset Breakdown as a Percentage

5 Progress Forward

5.1 **Closing the Gap**

5.1.1 As can be seen from the previous discussions administration has made some significant headway in addressing the “infrastructure gap”. Areas that have seen improvement are our roads, sidewalks, bridges, sanitary and now our City owned buildings. Each time we investigate an asset class in greater detail the better the picture is on its condition and the relative amount of reinvestment required.

5.1.2 The St Albert approach thus far has been to address those asset classes, and their subclasses that are the highest risk and shortest lifecycle. It is a balanced approach to ensure the overall infrastructure deterioration does not create emergency funding requests. The primary reasoning behind this is the simple fact that there is not enough funding available to fully sustain the infrastructure makeup. In 2011 we continued to make progress in the most critical areas but more work is required. Only through a focused and dedicated process will the City be able to become sustainable in our approach to asset management.

- 5.1.3 St Albert is not unique in our infrastructure situation as many communities throughout Canada are in similar if not more challenging situations. With the relative young age of our infrastructure we can address these issues over time. During the writing of this report the Government of Canada announced on 30 Nov 2011 that they will begin an engagement process with the three levels of government to develop a long range plan for public infrastructure. The following quote is taken from the Infrastructure Canada web site:

Ottawa, Ontario, November 30, 2011 – The Honourable Denis Lebel, Minister of Transport, Infrastructure and Communities, and Minister of the Economic Development Agency of Canada for the Region of Quebec, today launched the formal engagement process that will bring together the Government of Canada, provinces, territories, the Federation of Canadian Municipalities and others to develop a new long-term plan for public infrastructure beyond the expiry of the Building Canada Plan in 2014.

"Completing the economic recovery remains our Government's top priority. Our new plan will help identify Canada's infrastructure priorities to meet the needs of Canadians and build a more prosperous, competitive, and sustainable economy," said Minister Lebel. "Working together with partners, we will take stock, identify opportunities, and build the foundation of a new infrastructure plan that supports economic growth and job creation."

The engagement process will take place in three phases over the next year. First, the Government of Canada will work together with its partners to take stock of recent accomplishments and their impacts, and examine the results of the significant investments that have been made by all orders of government. The second phase will be working with our partners and leading experts to collaborate on research and analysis that will inform and guide the long-term infrastructure plan.

This important work will lay the foundation for the third phase that will include a series of in-depth discussions with partners to confirm the principles and priorities of the plan. The result: an effective, sustainable, long-term infrastructure plan for Canadians.

As the Government of Canada develops this new plan, it will continue to deliver significant infrastructure investments through the \$33-billion Building Canada Plan. It has also tabled legislation to make the \$2 billion Gas Tax Fund permanent, providing stable and predictable funding for municipalities to help support their local infrastructure priorities.

Through strong partnerships with provinces, territories, municipalities and other stakeholders, the Government of Canada is leading the way in investing in public infrastructure.

5.2 Working with Other Departments and Municipalities

- 5.2.1 The need for inter-departmental cooperation is imperative for the future planning needs of the infrastructure. The Infrastructure and Capital Planning (ICP) Branch will be looking for input by all users, maintenance crews and specialists within the City to help identify and plan for the future. The use of consultants for specific studies will be utilized to provide the required data needed to make timely and economic decisions.
- 5.2.2 The TCA (Tangible Capital Assets) PSAB 3150 is a legislative requirement set by the federal government. Tangible assets are non-financial assets having physical substance, these include: roads, buildings, vehicles, equipment, land, water and other utility systems, computer hardware and software, and bridges. To follow the requirements set out by PSAB all assets need to be recorded at cost and the cost less any residual value. This amortization value is recorded by the Finance Department who is provided updated asset inventory yearly from Engineering Services. Finance is the lead department for the TCA.
- 5.2.3 The City is also one of the lead municipalities in two working groups that were initiated in 2011. The Tangible Capital Asset Working Group began in February and allows for the interaction between municipalities in order to better understand PSAB requirements and provide unified answers and options to participating municipalities. See charter. The second group is Asset Management Alberta which had its first meeting in October 2011. This large group is aimed at helping municipalities understand the growing field of asset management and provide information and education to all municipalities in Alberta. Both British Columbia and Saskatchewan already have such groups in place.

5.3 10-Year Capital Plan

- 5.3.1. The 10 year capital plan assists the City plan for the future. It advises the City when and where funds are required to be spent and the total amount of funds required for a project. This planning tool is essential to balance the huge costs associated with maintaining infrastructure throughout its life cycle and when the time comes for replacement. The 10 year capital plan is linked to the strategic plan that addresses pressures the community feels today and provides a blueprint of what will happen into the future. From the strategic plan the capital plan identifies key infrastructure required to move the community towards the goals set by the municipality. The 10 year capital plan identifies the key infrastructure along with estimated funding required for the project and when in time the project is required.
- 5.3.2 The Strategic 10 year Capital Plan provides the City with the following information:
 - a. Provides a strategic framework for addressing St Albert's infrastructure priorities;
 - b. Assesses and recommends strategies for financing capital projects, including alternative financial arrangements; and

- c. Addresses potential risks to the plan including managing future costs for life-cycle replacement.

6 Conclusion

- 6.1 In general, both studies, Infrastructure Study and Infrastructure Risk Study (2003 and 2005), indicated the total amount of funding put towards preventive maintenance was below the recommended amount. Funds were not adequate enough to keep the assets at a good condition and also to allow for the maximum life-cycle to be reached.

Along with funding the City needs to be aware of the how the community expectations are rising while they are still looking at minimizing any cost increases. Communication and proactive initiatives must be undertaken as well as the continuous improvement to our programmes and plans.

- 6.2 The City's overall infrastructure is in good condition. Keeping them in good condition is what Infrastructure Management is designed to accomplish. Our continued pavement program allows the City to identify the areas that required rehabilitation and have resulted in the overall condition of the City's road network improving over the years. Sidewalks are assessed on a regular cycle, bridges are inspected regularly and our underground utilities are slowly being inspected.
- 6.3 The importance on knowing the current condition of our infrastructure and understanding exactly what and where our assets are is vital. The studies that were conducted in 2003 and 2005 provided the City with start points but that is not where we stop. Infrastructure is forever changing and therefore studies/reports are constantly required to be updated and be revised. In other words these reports are living documents.
- 6.4 The City needs to be committed to asset management. We do not want to follow the path of one time or short lived commitments when dealing with infrastructure. The ability to keep on top of our assets is essential in order to plan and grow into the future.
- 6.5 As we look to how we can improve the way we do our programs and look after our infrastructure we need to ask ourselves the following:
 - a. What do we have?
 - b. What condition is it in?
 - c. What is it worth?
 - d. What do we want it to do?
 - e. When do we need to do it?
 - f. How much will it cost?
 - g. And how will we deliver it?

7 Recommendations

- 7.1 That ICP Branch continues to produce an annual report that provides information on the state of our current infrastructure and identifies long term plans in order to maintain all infrastructure at a sustainable level and that this report be brought back to the Standing Committee on Finance.