MUNICIPALITY OF MISSISSIPPI MILLS
2016

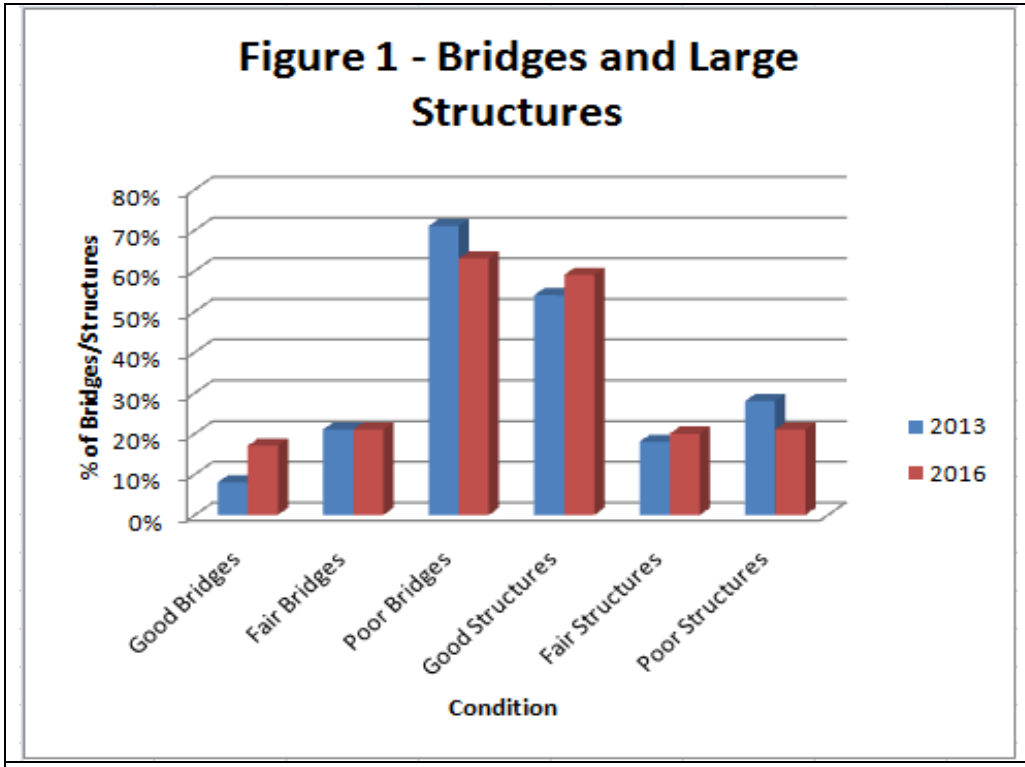
TABLE OF CONTENTS

ASSET MANAGEMENT STRATEGY
BRIDGES AND LARGE CULVERTS (>3m Span)

Inventory	Fifteen (15) bridges and eleven (11) large culverts with a span greater than 3m (refer to PSAB 3150 inventory for structure type, age, width, span, useful life, etc.)
Anticipated Asset Life Cycle	Depending on construction practices and materials, bridges and large culverts have varying assumed lives. The life cycle can be affected by traffic volumes and loads, development and growth pressures, climate, risk factors, and salt exposure. In 2009, the Municipality established assumed lifecycles for infrastructure as part of the PSAB 3150 inventory work. Assumed lifecycles were presented as follows: • Bridges – 75 Years (New Replacement) • Bridges – 60 Years (Existing Structures) • Large Span Concrete Box Culverts – 65 years • Large Span Corrugated Steel Culverts – 45 years
Integrated:	Bridge and large culvert work may be integrated with road resurfacing or road widening projects however not generally integrated with other infrastructure.
Rehabilitation and Investment Strategies:	<u>Bridges</u> Bridge rehabilitation or replacement is based on bridge age and assumed life spans and result of condition surveys: Asphalt deck resurfacing - 25 years, joint replacement - 40 years, patching or waterproofing on concrete deck – 40 years. For budgeting purposes, bridge improvements are categorized based on the value of the repairs as a percentage of the overall replacement cost. Details are as follows: • Major Bridge Reconstruction – Repairs are 50-60% of replacement cost • Minor Bridge Rehabilitation – Repairs are 25-50% of the replacement cost • Major Item Repairs – Repairs are 5-25% of the replacement cost • Minor Item Repairs – Repairs are less than 5% of the replacement cost Where possible, dollars are heavily focused on the preservation and maintenance of major bridge components which include: bridge abutments, wing walls and deck components. Maintaining these elements in a good state of repair can significantly extend the service life of bridges and avoid significant add-on environmental and social costs triggered by replacement.

	<u>Large Culverts</u> The rehabilitation of large culverts is generally not practical where significant deterioration or deficiencies exist in the metal liner (barrel). Culvert replacement is normally planned in these circumstances. Repair works often include inlet and outlet structures (headwalls), cut off walls, retaining walls, restoration of backfill, slope protection and guide rails. In the case of concrete structures, some repair work of the barrels may be included if the opening is large enough to permit construction access.
Maintenance Strategies:	The Municipality is moving towards the development of new and progressive preventative maintenance programs to preserve its key bridges and structures. There is awareness that regular maintenance can reduce the potential for premature deterioration of structural elements and can assist in extending the useful life of the Municipality's structure inventory. Overall maintenance needs vary depending on structure, location, traffic volumes, winter control procedures (sanding vs salting), size of structure and past maintenance. The following maintenance programs are currently under consideration: • Periodic bridge cleaning (power washing) of all components exposed to roadway traffic and where debris accumulation is prevalent. Typically cleaned each spring after winter operations have ceased; • Concrete spot repairs – localized patching of small concrete spalls and delaminations on the deck or in areas that are splash zones (top of deck, curbs, expansion joint block outs, etc...). Completing these repairs will assist in preventing the accelerated deterioration of concrete in these areas by reducing the ingress of chlorides, etc… These repairs are generally carried out on an as-needed basis. • Steel spot repairs / spot coating – would include periodic touch-ups to steel coatings located in areas within the roadway splash zones (truss bottom chords, exterior floor beams, stringers, etc. as well as localized spot repairs in areas of appreciable section loss / corrosion. These repairs are generally carried out on an as-needed basis. • Clearing of debris in waterway – this would include clearing of trapped debris in the vicinity of the structure (upstream/downstream). This cleaning would typically be carried out on an annual basis after the spring run-off period. • Asphalt surface repairs / rout and seal – would include cold patch asphalt repairs, and routing and sealing of wide cracks in asphalt. This operation would typically be carried out on an annual basis after winter clearing operations have ceased. • Bridge deck drainage – would include maintaining the existing deck drains free of debris and maintaining them in an unplugged condition. This operation would typically be carried out on an annual basis after winter clearing operations have ceased.

	• Clearing of debris / vegetation from approach guiderail. This is predominantly a safety measure, however the removal also prolongs the lifespan of the guiderail as accumulation of debris can accelerate rot on wooden posts and induce corrosion on steel components. • Surface sealing of exposed concrete surfaces – would include cleaning and applying a concrete sealer on concrete surface exposed within the splash zone (exposed concrete decks, curbs, sidewalks and barrier walls). This operation is typically recommended in intervals of 3-5 years. Sealing surfaces periodically assists in minimizing the migration of chlorides in the concrete.
Desired Levels of Service:	The long term desired level of service is to achieve by 2020 and continually maintain 70% of our structures with a good condition rating (a BCI of 70% or greater).
Life Cycle Consequences:	Bridge and culvert lifecycles will be reduced, level of service is lowered and safety is compromised.
Corporate / Consulting Reports on Subject:	• Bridge Management Study Report by HP Engineering Dated July 2015 • Bridge Management Study Report by HP Engineering Dated September 2013; • Bridge Management Study Report by HP Engineering dated March 2012; • Bridge Management Study Report by Genivar 2009;
Procurement Methods:	Procurement Policy – Bylaw 12-79
Financial Strategy	Refer to Financial Plan –Appendix D
Other Information or Reference Materials	Canadian Highway Bridge Design Code MTO Standards and Specifications



Service Indicators

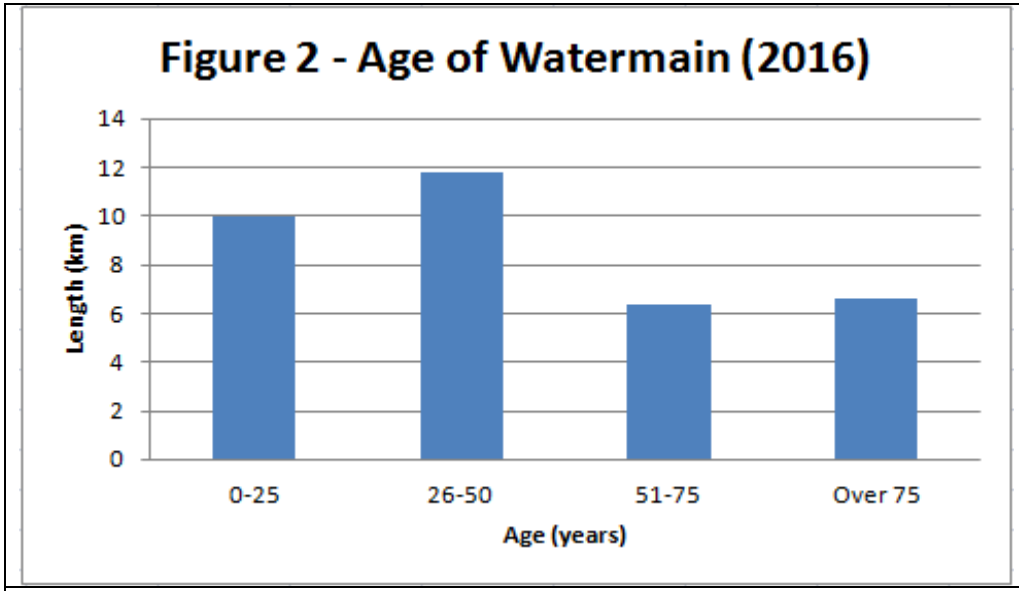
Bridges		
	2013	2016
Total Number of Bridges	15 (2,519m^2)	15 (2,519m^2)
Good Bridges (BCI >70)	8%	17%
Fair Bridges (BCI 60-70)	21%	21%
Poor Bridges (BCI <60)	71%	63%
Large Structures		
Total Large Structures	11 (672m^2)	11 (672 m^2)
Good Structures (>70)	54%	59%
Fair Structures (60-70)	18%	20%
Poor Structures (<60)	28%	21%

- The Municipality still has a significant backlog of bridge repair and rehabilitation work to complete;
- Preventative maintenance programs and significant near term capital investments will be required for the Municipality to meet its objective of having 70% of the structures with BCI's of 70 or greater.

ASSET MANAGEMENT STRATEGY
WATER DISTRIBUTION SYSTEM

Inventory	35.07 km of watermains, 260 fire hydrants, 483 valves, 2,502 residential accounts and 320 non residential accounts
Anticipated Asset Life Cycle	The lifecycle for watermains is primarily based on the type of material and is listed as follows: • 80 years – PVC pipe • 75 years – ductile iron pipe (non lined) • 70 years – cast iron pipe • 50 years – copper pipe • 50 years – valves and hydrants These lifecycles assume adequate maintenance is provided through the course of the component's life.
Integrated:	A watermain replacement may be integrated with road resurfacing, road reconstruction work and other utilities such as hydro, telephone, natural gas and cable. It may also be a standalone replacement with a trench cut and repair.
Condition Assessments	Watermain records are maintained and updated annually within the Municipality's GIS system and within the PSAB inventory. Attributes such as age, length, size, and material are updated annually. Break records are also updated annually to track areas where unplanned works are on the rise.
Rehabilitation and Investment Strategies:	The criteria for prioritizing the replacement schedule for watermains is based on break history, age of pipe, pipe materials, size of pipe, soil conditions, fireflow considerations, and growth related needs. The road construction program may expedite the replacement of a pipe segment if replacement is scheduled in the near future. The replacement criteria is difficult to define but studying break histories and failure trends can determine when unplanned maintenance costs are increasing at a high enough rate that economically, it makes sense to replace or rehabilitate the pipe. Watermain rehabilitation is based on the current condition of the pipe. It is difficult to determine the condition since it is buried. For this reason, the replacement strategy relies entirely on break history, age/size, material type, hydraulic considerations, and aligning with urban road programs. There are numerous methods for rehabilitating watermains such as complete replacement, cleaning and cement mortar lining, slip lining and pipe bursting. Cathodic protection also helps prolong the life expectancy of the pipe.

	The Municipality continues to invest heavily in watermain replacement, largely due to the fact than many pipes are not properly bedded and are susceptible to damage from seasonal frost action. Structural watermain relining (slip lining) remains an option, however there are limited service providers in Eastern Ontario and a large program is otherwise required to make the trenchless alternative a cost competitive solution.
Maintenance Strategies:	Water system maintenance is carried out in accordance with the Operational Plan developed and approved under the Provincial licensing requirements of the Safe Drinking Water Act. The Operational Plan includes a Quality Management System that includes ongoing evaluations of best practices to promote a culture of continuous improvement. Internal and external audits are also performed on the Quality Management System annually to ensure its continued effectiveness.
Desired Levels of Service:	The Municipality of Mississippi Mills and the Ontario Clean Water Agency work together to deliver safe drinking water to businesses and residents served by the Mississippi Mills Drinking Water System. Conformance and compliance programs are in place to ensure that the Municipality continually abides by all Federal and Provincial regulatory requirements.
Life Cycle Consequences:	Many factors can influence the long term performance of watermains and many systems have been in operation locally in excess of 80 years. In 2012, approximately 7km of the Municipality's watermains were considered to be operating at or beyond their useful lives. Watermain failures can cause significant social and environmental impacts, therefore the Municipality's prioritization plan looks at the consequence of failure when prioritizing works. Watermains at or beyond their operational life will be given priority where possible in high risk areas (arterial roads, business areas, hospitals, long term care homes, schools, etc.).
Corporate / Consulting Reports on Subject:	• Water and Sewer Master Plan • Water and Wastewater Rate Study • Development Charges Study
Procurement Methods:	Procurement Policy – Bylaw 12-79
Financial Strategy	Refer to Financial Plan-Appendix D
Other Information or Reference Materials	Quality Management System – Mississippi Mills Drinking Water System MOE Drinking Water System Design Guidelines 2008



Service Indicators

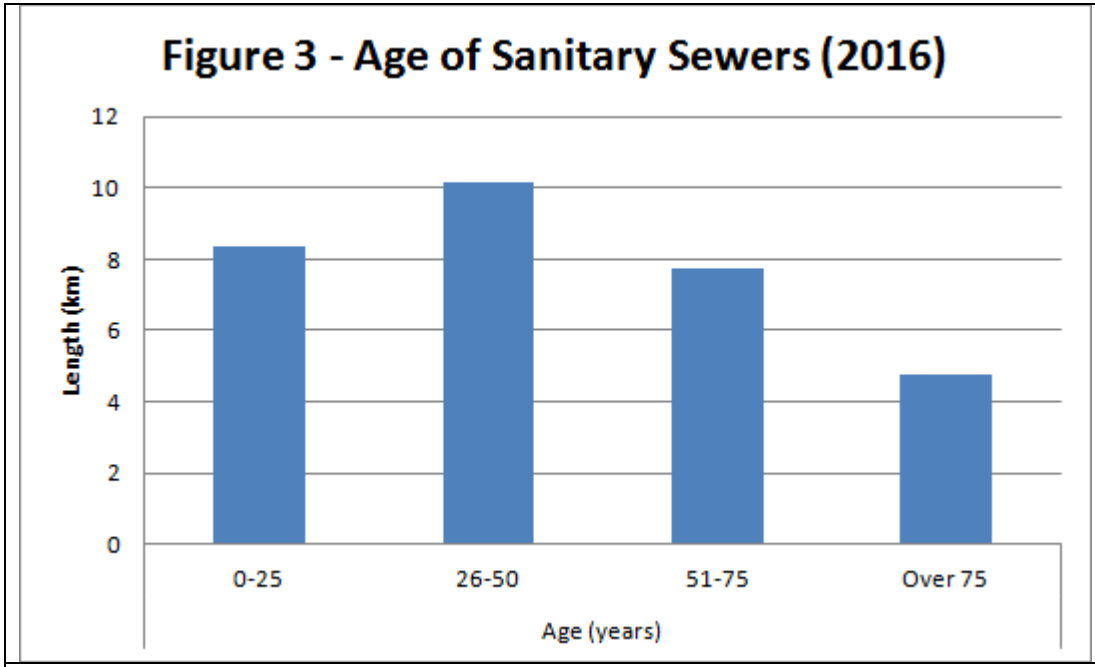
- Total length of water mains = 35.07 km
- Average age of distribution system = 46 years
- Mains operating beyond useful service life = 4.95 km
- Total watermain breaks in 2015 = 4

- Future challenges will result from the fact that a high proportion of the water network is constructed from cast iron or ductile iron pipe and will be reaching the end of its useful life.

ASSET MANAGEMENT STRATEGY
SANITARY SEWER SYSTEM

Inventory	31.07 km of sanitary sewers
Anticipated Asset Life Cycle	The lifecycle for a sewer main is primarily based on the type of material and is listed as follows: • 80 years – PVC pipe • 70 years – asbestos cement or concrete pipe • 70 years – vitrified clay pipe • 50 years – manholes These lifecycles assume adequate maintenance is provided through the course of the component's life.
Integrated:	A sanitary sewer replacement may be integrated with road resurfacing, road reconstruction work and other utilities such as hydro, telephone, natural gas and cable and usually includes sanitary manholes. It may also be a standalone replacement with a trench cut and repair.
Condition Assessments	Sanitary sewer records are maintained and updated annually within the Municipality's GIS system and within the PSAB inventory. Attributes such as age, length, size, and material are updated annually. All sewers are cleaned and inspected once every four (4) years through a closed circuit television (CCTV) program. The camera work allows the Municipality to establish the system's structural and operational scores for establishing rehabilitation priorities.
Rehabilitation and Investment Strategies:	Sanitary sewers, unlike watermains are readily accessible for visual inspection and as a result rehabilitation strategies are simplified. Once the pipe has been CCTV inspected, the Municipality can establish priorities for replacement. Other factors affecting the replacement criteria are localized collapses, material type, upsizing requirements as well as the coordination with the roads program. Replacement is the most common method for collapsed or heavily deteriorated pipe. Cure in place pipe (CIPP) rehabilitation alternatives are however available for sewers where it is believed that the useful life of a sewer (usually clay or concrete) can be prolonged for up to 50 years. This method helps reduce the costs associated with restoration when the project is complete. Other methods include spot repairs and joint sealing.

Maintenance Strategies:	The sanitary sewer system is cleaned and inspected by closed circuit television (CCTV) at least once every four (4) years. These inspection programs are carried out in the springtime when groundwater infiltration and inflow are most visible. Visual inspections of manholes on trunk lines and problem areas are also carried out on a monthly basis by the Municipality. All other aspects of the sewer system maintenance are otherwise carried out in accordance with the provincial requirements of the Ontario Water Resources Act.
Desired Levels of Service:	The Municipality of Mississippi Mills and the Ontario Clean Water Agency work together to manage the sewage collection system serving businesses and residents on the public sewer system. Conformance and compliance programs are in place to ensure that the Municipality continually abides by all Federal and Provincial regulatory requirements.
Life Cycle Consequences:	The structural deterioration can result in infiltration of groundwater into the sewer that results in loss of structural pipe bedding. It can also result in the accumulation of debris and sediment in sags in the sewer, calcite build-up at the cracks and joints, as well as root migration into the sewers. All of these factors further deteriorate the sewer and increase the potential for back-ups and basement flooding. Another major consequence of groundwater infiltration is the added volume of sewage to be pumped and treated at the sewage treatment plant, resulting in added costs.
Corporate / Consulting Reports on Subject:	• Water and Sewer Master Plan • Water and Wastewater Rate Study • Development Charges Study
Procurement Methods:	Procurement Policy – Bylaw 12-79
Financial Strategy	Refer to Financial Plan – Appendix D
Other Information or Reference Materials	MOE Design Guidelines for Sewage Works 2008



Service Indicators (2016)

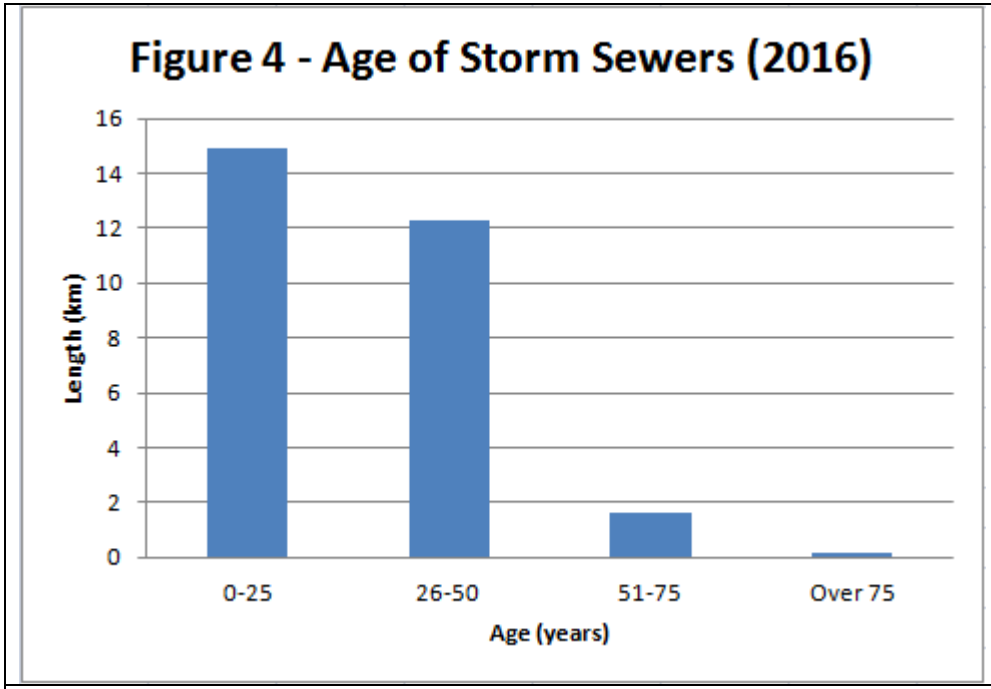
- Total sanitary sewer network length = 31.07 km
- Average age of collection system = 47 years
- Sewers operating beyond useful service life = 3.5km

- Future challenges will result from the fact that a high proportion of the sanitary sewer network is constructed from vitrified pipe and will be reaching the end of its useful life.

ASSET MANAGEMENT STRATEGY
STORM SEWER SYSTEM

Inventory	23.28 km of storm sewers
Anticipated Asset Life Cycle	The lifecycle for a storm sewer is primarily based on the type of material and is listed as follows: • 80 years – PVC pipe • 70 years – asbestos cement or concrete pipe • 50 years – CSP pipe These lifecycles assume adequate maintenance is provided through the course of the component's life.
Integrated:	A storm sewer replacement may be integrated with road resurfacing, road reconstruction work and other utilities such as hydro, telephone, natural gas and cable and usually includes storm manholes and catch basins. It may also be a standalone replacement with a trench cut and repair.
Condition Assessments	Storm sewer records are maintained and updated annually within the Municipality's GIS system and within the PSAB inventory. Attributes such as age, length, size, and material are updated annually. The Municipality is working towards the gathering more physical data on the system using closed circuit television (CCTV) program. As a general practice storm sewers are assessed for replacement in parallel with all road rehabilitation projects and all sanitary sewer replacements.
Rehabilitation and Investment Strategies:	Storm sewers, unlike watermains are readily accessible for visual inspection and as a result rehabilitation strategies are simplified. Once the pipe has been CCTV inspected, Public Works staff can establish priorities for replacement. Other factors affecting the replacement criteria are localized collapses, material type, upsizing requirements as well as the coordination with the roads program. Replacement is the most common method for collapsed or heavily deteriorated pipe. Cure in place pipe (CIPP) rehabilitation alternatives are however available for storm drains where it is believed that the useful life of a drain (usually clay or concrete) can be prolonged for up to 50 years. This method helps reduce the costs associated with restoration when the project is complete.

Maintenance Strategies:	Catch basins are cleaned annually to remove sediments and debris that could otherwise impair run-off quality and/or result in progressive pipe blockages. Storm drainage systems are only inspected by closed circuit television (CCTV) programs whenever road projects and/or sewer replacement projects are considered. Over time, the Municipality is adding more funding in condition assessments to establish a stronger understanding of the state of its storm sewer assets. All other aspects of the storm system maintenance are otherwise carried out in accordance with the provincial requirements of the Ontario Water Resources Act.
Desired Levels of Service:	Conformance and compliance programs are in place to ensure that the Municipality continually abides by all Federal and Provincial regulatory requirements.
Life Cycle Consequences:	Storm sewers will deteriorate in the same manner as sanitary sewers although the consequences of failure of a storm sewer are not usually as significant as those for failure of a sanitary system. Structural deterioration can result in infiltration of groundwater into the sewer that results in loss of structural pipe bedding. It can also result in the accumulation of debris and sediment in sags in the storm sewer. As with any buried infrastructure, maintenance and rehabilitation is key to the longevity of the system. Without significant yearly spending, major failures will occur and larger budgets will be required.
Corporate / Consulting Reports on Subject:	None
Procurement Methods:	Procurement Policy – Bylaw 12-79
Financial Strategy	Refer to Financial Plan – Appendix D
Other Information or Reference Materials	MOE Design Guidelines for Sewage Works 2008



Service Indicators (2016)

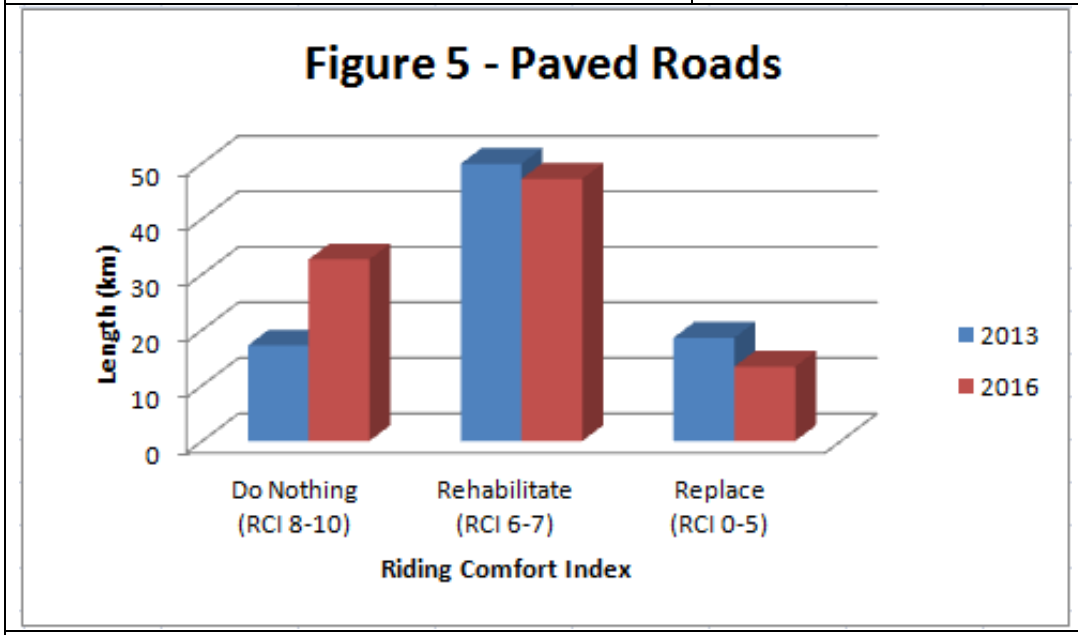
- Total storm sewer network length = 29 km
- Average age of drainage system = 24 years
- Storm operating beyond useful service life = 0.48km

- Maintenance and inspection programs are needed to acquire more condition rating data on the system in order to develop improved financial planning models.

ASSET MANAGEMENT STRATEGY
PAVED ROADS

Inventory	93.3 km of paved roadways
Anticipated Asset Life Cycle	Pavement life of a newly constructed road is affected by design, traffic volumes and loads, construction quality and climate. The end of the useful life is generally as follows: • Arterial roads – 15 years • Collector roads – 25 years • Local roads-35 years
Integrated:	A paved road surface replacement may be integrated with buried water and sewer work, curbs as well as other utilities such as hydro, telephone, natural gas and cable. It may also be a standalone replacement depending on the lifecycles of related components.
Condition Assessments	Roadways are inspected once every three (3) years using a combination of dynaflect testing for rural roadways and visual inspections for urban roadways. Roadways are then provided with a Riding Comfort Index (RCI) rating from zero (0) to ten (10) which measures defects in the pavement. An RCI equal to ten (10) is new pavement and an RCI equal to zero (0) is a pavement that is impassible.
Rehabilitation and Investment Strategies:	RCI threshold point of rehabilitation or reconstruction is as follows: Rehabilitation = 6 to 7 (rehabilitation with crack seals, patching, microsurfacing) Reconstruction = 5 or less (total replacement of pavement)
Maintenance Strategies:	The Municipality continues to provide more annual funding focused on pavement preservation techniques including crack sealing, patching, edge repairs and microsurfacing where possible. These investment strategies are helping to offset the increased growth in the infrastructure deficit caused by the backlog of road replacements. Pavement replacement strategies are being given priority on a risk management basis for high volume roadways. Roadways are also being reconstructed along with urban water and sewer replacement programs where possible.
Desired Levels of Service:	The Municipality is continuing to work towards having 70% of its pavement assets with an RCI rating of 7 or higher.
Life Cycle Consequences:	Underfunding pavement rehabilitation results in more pavements failing below an RCI of 6.0 and results in the quadrupling of construction costs.

	Rehabilitating a pavement with an RCI of 6.0 reflects a cost of $6.00 per square meter and an added life of up to 8 years versus reconstructing a pavement with an RCI of 5.0 at a cost of $25 per square meter. Pavement falling below an RCI of 4.0 affects level of service and increases risk and liabilities.
Corporate / Consulting Reports on Subject:	• Rural Network Level Pavement Condition Survey • Almonte Ward Pavement Condition Survey
Procurement Methods:	Procurement Policy – Bylaw 12-79
Financial Strategy	Refer to Financial Plan – Appendix D
Other Information or Reference Materials	Minimum Maintenance Standards – Ontario Regulation 239/02



Service Indicators

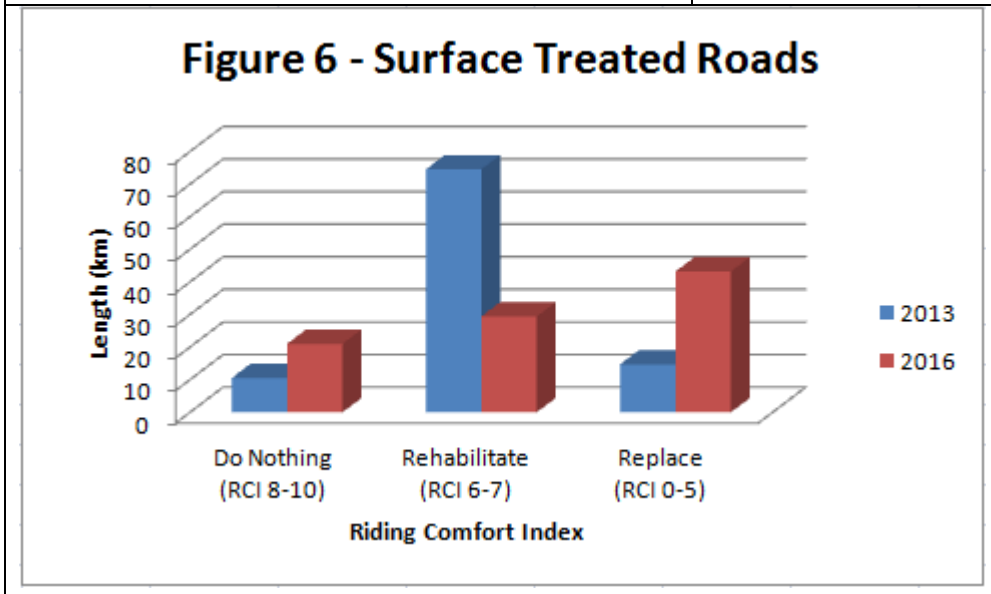
Paved Roads		
	2013	2016
Network Length	85.6	93.3
Do Nothing RCI 8 - 10	17.2 km (20%)	32.7 km (35%)
Rehabilitate RCI 6 – 7	49.9 km (58%)	47.2 km (51%)
Replace RCI 0 – 5	18.6 km (22%)	13.4 km (14%)

The Municipality's pavement road network has improved over the past 4 years. The percentage of roadways requiring replacement has dropped from 22% to 14%. A successful holding pattern for rural pavements has been achieved through the use of microsurfacing.

ASSET MANAGEMENT STRATEGY
SURFACE TREATED ROADS

Inventory	93.6 km of surface treated roadways
Anticipated Asset Life Cycle	Surface treatment life of a newly constructed road is affected by design, traffic volumes and loads, construction quality and climate. The end of the useful life is generally as follows: • Local roads – 8 years
Integrated:	A surface treated road surface replacement may be integrated with replacement of rural drainage culverts. It may also be a standalone replacement depending on the lifecycles of related components.
Condition Assessments	Roadways are inspected once every three (3) years using a combination of dynaflect testing for rural roadways and visual inspections. Roadways are then provided with a Riding Comfort Index (RCI) rating from zero (0) to ten (10) which measures defects in the pavement. An RCI equal to ten (10) is new surface treatment and an RCI equal to zero (0) is a surface that is impassible.
Rehabilitation and Investment Strategies:	RCI threshold point of rehabilitation or reconstruction is as follows: Rehabilitation = 6 to 7 (rehabilitation with crack seals, patching, microsurfacing) Reconstruction = 5 or less (total replacement of surface)
Maintenance Strategies:	The Municipality continues to provide more annual funding focused on surface treatment preservation techniques including patching, edge repairs, slurry seals and microsurfacing where possible. These investment strategies are helping to offset the increased growth in the infrastructure deficit caused by the backlog of road replacements. Surface treatment replacement strategies are being given priority on a risk management basis for high volume roadways. Roadways are also being reconstructed along with ditching and culvert replacement programs where possible.
Desired Levels of Service:	The Municipality is continuing to work towards having 70% of its surface treatment assets with an RCI rating of 7 or higher.
Life Cycle Consequences:	Underfunding surface treatment rehabilitation results in more surfaces failing below an RCI of 6.0 and results in the quadrupling of construction costs.

	Rehabilitating a surface treatment with an RCI of 6.0 reflects a cost of $3.00 per square meter and an added life of up to 5 years versus reconstructing a surface treatment with an RCI of 5.0 at a cost of $12 per square meter. Surface treatments falling below an RCI of 4.0 affects level of service and increases risk and liabilities.
Corporate / Consulting Reports on Subject:	• Rural Network Level Pavement Condition Survey
Procurement Methods:	Procurement Policy – Bylaw 12-79
Financial Strategy	Refer to Financial Plan – Appendix D
Other Information or Reference Materials	None



Service Indicators

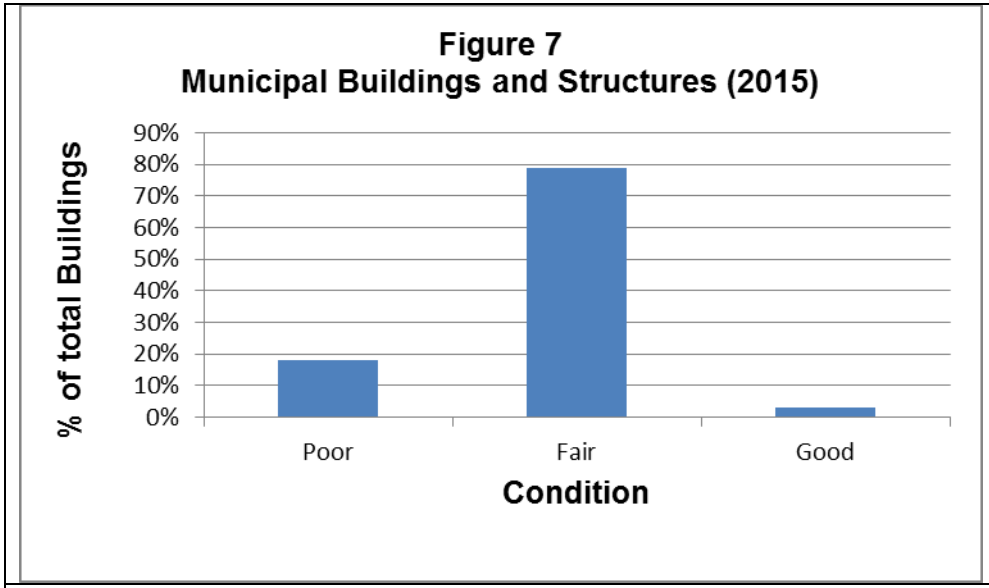
Surface Treated Roads		
	2013	2016
Network Length	99.7 km	93.6 km
Do Nothing RCI 8 - 10	10.5 km (11%)	21.0 km (22%)
Rehabilitate RCI 6 – 7	74.5 km (75%)	29.4 km (31%)
Replace 0 – 5	14.7 km (14%)	43.2 km (47%)

- The Municipality's surface treated road network is largely in fair to poor range (78%) and a large volume of roads may fall into poor condition over the next few years unless significant surface treatment rehabilitation investments are made. 9.1 km of the roads requiring replacement are boundary roads shared with other municipalities which requires coordination with those municipalities for replacement.

ASSET MANAGEMENT STRATEGY
MUNICIPAL BUILDINGS AND STRUCTURES

Inventory	33 Municipal Buildings and Structures (refer to PSAB 3150 inventory for structure location, age, useful life, etc.)
Anticipated Asset Life Cycle	Buildings and structures have useful life estimates of 40 years unless otherwise determined. In 2009, the Municipality established lifecycles for infrastructure as part of the PSAB 3150 inventory work. Values were determined based on the whole structure. Components were included in the initial structure valuation with the assumption that major components (i.e. HVAC, mechanical, etc.) would be tracked separately upon replacement.
Integrated:	Municipal buildings and structures are not usually integrated with other infrastructure work. Whole buildings are not generally replaced but periodically require major maintenance, renovation or expansion.
Condition Assessments	Condition Assessments were completed by AME Canada Architects Ltd. in 2014 and 2015 for 16 municipal buildings and structures. The reports determined the condition of certain categories including several sub-categories for each as follows: • Structure including foundation and superstructure • Building Envelope including roof, exterior walls, windows, etc. • Interior Finishes including flooring, walls, ceilings, doors, etc. • Life Safety including fire separation, exit signs, etc. • Mechanical including heating, refrigeration, plumbing, etc. • Electrical including power, lighting, CO2, security, etc. • Site including drainage, parking, fencing, etc. The remainder of the Municipality's buildings and structures have replacement, expansion, or major maintenance estimates based on visual inspection of their condition and age estimates as determined by PSAB 3150.
Rehabilitation and Investment Strategies:	The AME Reports provided a condition assessment for each category and sub-category and provided major maintenance details for the next 5-20 years based on a condition assessment of : • Good: more than 10 years' useful life • Fair: 1-10 years' useful life • Poor- less than 1 year useful life

Maintenance Strategies:	The AME Reports provided a condition assessment for each category and sub-category and provides ongoing maintenance details for the next 5-20 years based on a condition assessment
Desired Levels of Service:	The long term desired level of service is to achieve and continually maintain the Municipality's buildings and structures with a good condition rating defined in the AME condition assessment reports and to provide safe facilities for users and employees. Facility maintenance/rehabilitation/replacement is to conform to applicable legislation or standards i.e. Fire Code, Building Code, Accessibility Standards, etc. and where possible include, environmental and energy efficiencies, etc.
Life Cycle Consequences:	Increased deterioration of buildings and properties, health & safety concerns, inefficient operation, higher operating costs
Corporate / Consulting Reports on Subject:	• AME Canada Architects Ltd. Reports for 16 buildings and structures completed in 2014 and 2015 • Insurance Inspection reports • Structural Inspection reports
Procurement Methods:	Procurement Policy – Bylaw 12-79
Financial Strategy	Refer to Financial Plan –Appendix D
Other Information or Reference Materials	PSAB 3150 documents



Service Indicators

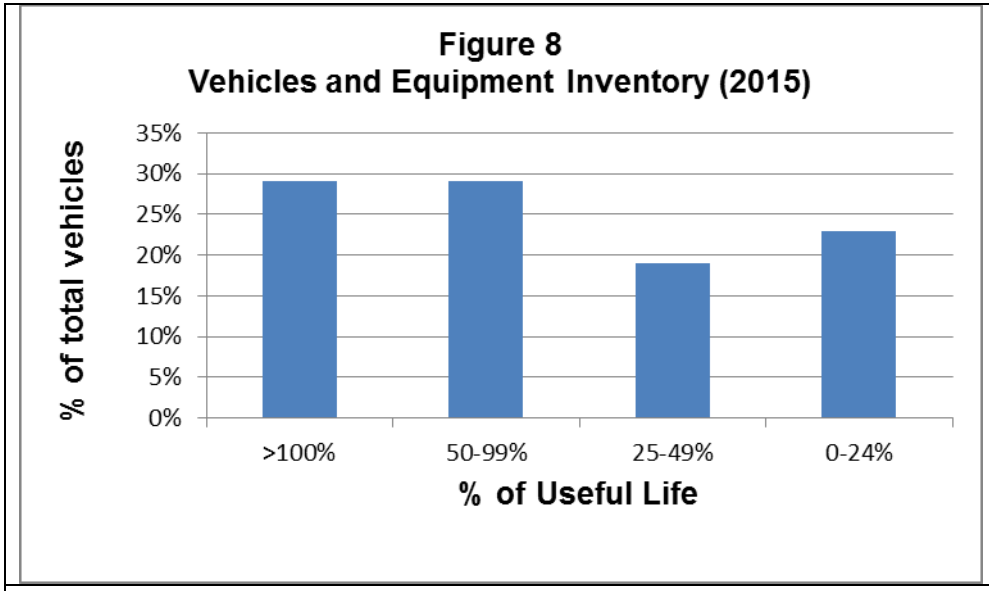
- Total in Poor Condition = 6 Buildings and Structures
- Total in Fair Condition = 26 Buildings and Structures
- Total in Good Condition = 1 Building and Structure

- Of the Municipality's buildings and structures only one is considered to be in good condition, with the majority of 79% being in fair condition. Significant investments in buildings and structures will be required in the near future.

ASSET MANAGEMENT STRATEGY
VEHICLES AND EQUIPMENT

Inventory	52 Units in total allocated as follows: • 13 Fire Department • 30 Public Works Department • 2 Building Department • 4 Parks & Recreation Department • 3 Water & Sewer Department. Refer to PSAB 3150 data for vehicle description, location, age, etc.
Anticipated Asset Life Cycle	The life cycle varies depending on frequency of use, and vehicle/equipment type. Refer to PSAB 3150 documentation for details: Light Trucks-10 years Sidewalk Plows-15 years Fire Pumpers/Tankers-20 years Plow/Dump Trucks-20 years Graders/Backhoes-20 years
Integrated:	The replacement of vehicles and equipment is not usually integrated with other infrastructure replacement needs but may incorporate technological advances, environmental regulations, operational changes and level of service changes
Condition Assessments	Condition assessments are completed by a visual inspection of the condition. Consideration should also be given to age, fuel use, frequency and dollar value of repairs, frequency and length of downtime, health & safety risks to residents of prolonged downtime, costs for rentals, etc
Rehabilitation and Investment Strategies:	Replacement occurs when the vehicle/equipment is not performing optimally and has reached the end of its useful life. Usage is reviewed to warrant new replacement. All options are considered i.e. purchasing used, leasing, seasonal rentals, refurbishing to extend life, etc.
Maintenance Strategies:	Annual inspections and preventative annual maintenance where appropriate.
Desired Levels of Service:	The desired level of service is to ensure that vehicles/equipment are kept in a state of good repair and that the vehicles/equipment are replaced/refurbished at the end of their useful life to ensure that downtime is minimized and that excessive repairs/operating costs are not incurred.

Life Cycle Consequences:	Health & safety concerns, inefficient operation, higher operating costs, frequent breakdowns
Corporate / Consulting Reports on Subject:	None
Procurement Methods:	Procurement Policy – Bylaw 12-79
Financial Strategy	Refer to Financial Plan –Appendix D
Other Information or Reference Materials	PSAB 3150 documents



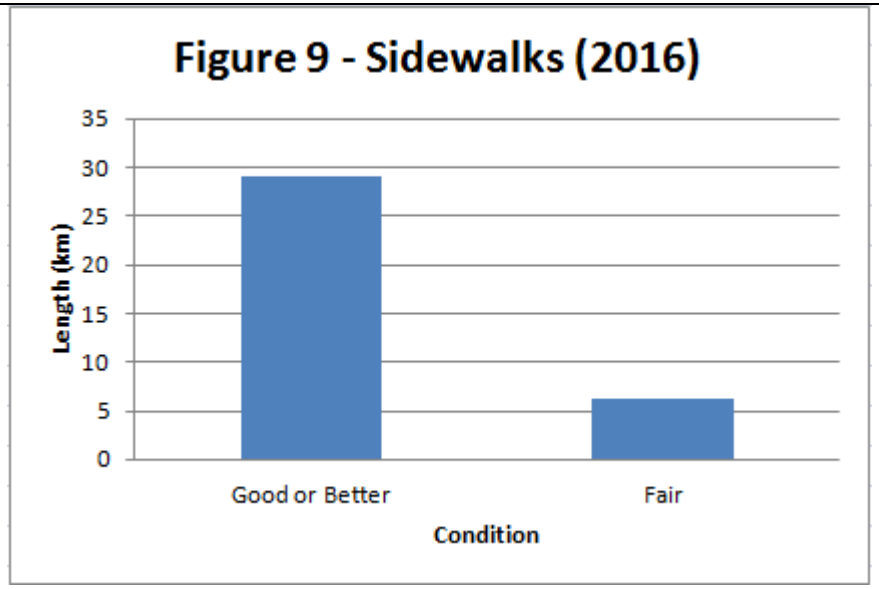
Service Indicators

- Total past useful life (>100%) = 15 units
- Total 50-99% of useful life = 15 units
- Total 25-49% of useful life = 10 units
- 0-24% of useful life (relatively new) = 12 units

- Of the Municipality's vehicles and equipment, 30% are past their useful lives and another 30% are nearing the end of their useful lives. Significant investments in vehicles and equipment will be required in the near future.

ASSET MANAGEMENT STRATEGY
SIDEWALKS

Inventory	35.92 m of Concrete Sidewalks
Anticipated Asset Life Cycle	The life of a newly constructed sidewalk is affected by design, traffic volumes and loads at entrances/driveways, construction quality and climate. Useful life is generally in the range of 35 years.
Integrated:	A sidewalk replacement will most often be integrated with a roadway reconstruction, water and sewer replacement, and/or other utilities such as hydro, telephone, natural gas and cable. It may also be a standalone replacement depending on the condition and lifecycles of related components.
Condition Assessments	Sidewalks are visually inspected once every year with all discontinuities photographed and tripping hazards spray-painted in conformance with the provincial Minimum Maintenance Standards.
Rehabilitation and Investment Strategies:	When severely deteriorated, sidewalks may be identified for replacement as a standalone project. For all other cases, sidewalk renewal occurs in conjunction with roadway/sewer/utility works.
Maintenance Strategies:	Depending on the nature and severity of the discontinuity, slab jacking or sidewalk grinding techniques may be employed to address tripping hazards to avoid costly removal and replacement of sidewalk panels. All tripping hazards are spray-painted on a yearly basis to draw attention to the discontinuity in accordance with the provincial Minimum Maintenance Standards.
Desired Levels of Service:	To maintain 70% of the Municipal sidewalks in a condition rating of good or better. The Municipality continues to work towards having a fully accessible sidewalk network with as few discontinuities as possible, with tripping hazards addressed through grinding, jacking or replacement.
Life Cycle Consequences:	Not addressing sidewalk replacement in a timely fashion results in the deterioration of the sidewalk network leading to a social impact, tripping hazards creating liability for the Municipality, and potential damage to sidewalk snow clearing equipment.
Corporate / Consulting Reports on Subject:	Internal Annual Review, External Review by Precision Concrete 2015
Procurement Methods:	Procurement Policy – Bylaw 12-79
Financial Strategy	Refer to Financial Plan –Appendix D
Other Information or Reference Materials	PSAB 3150 documents



Service Indicators

- Total linear meters of sidewalk 35.29 km
- Total linear meters in Good or Better condition 28.98 km (82%)
- Total linear meters in Fair condition 6.31 km (18%)

The sidewalk network has several small deficiencies, however, the overall condition is good with 82% in a good or better condition.

ASSET MANAGEMENT STRATEGY
STREET & TRAFFIC LIGHTS

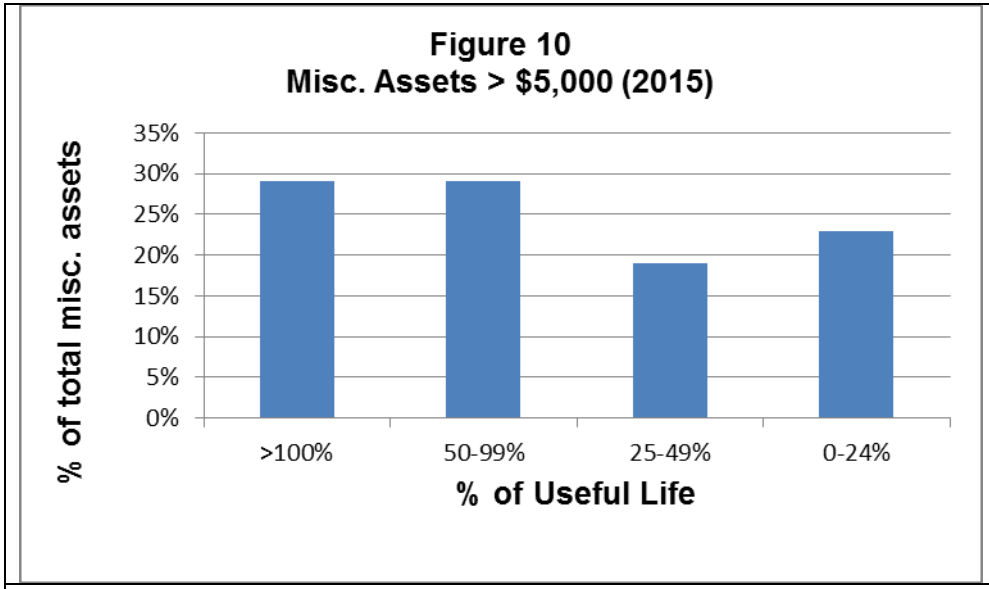
Inventory	Includes street lights in Almonte, Ramsay and Pakenham wards, Heritage lights on Mill St. and Bridge St. in Almonte Ward and traffic lights on Ottawa St. in Almonte Ward. (Refer to PSAB 3150 documents for details)
Anticipated Asset Life Cycle	Street and Traffic lights have various components such as controllers, lamps, signal heads, poles, luminaires, etc. For PSAB 3150 reporting, street and traffic lights were valued as a compete item rather than valuing the individual components with useful lives as follows: • Street lights-20 years • Traffic lights-40 years • Heritage Lights-30 years Lifecycle may be influenced by pole material, climate, changing technologies, etc.
Integrated:	Usually, street lighting is installed during subdivision development and assumed by the Municipality. Replacement is not usually integrated with any other infrastructure replacements but may be integrated with rehabilitation work of the road network.
Condition Assessments	Condition assessments are reviewed during regular routine patrols to ensure lights are operational in accordance with provincial Minimum Maintenance Standards.
Rehabilitation and Investment Strategies:	In 2017, the Municipality intends to replace all existing street lighting with LED lights. Heritage lighting will be replaced when major rehabilitation work is completed in the downtown core of Almonte Ward.
Maintenance Strategies:	All non-functioning fixtures are scheduled for immediate repair as per the timelines identified in the Minimum Maintenance Standards.
Desired Levels of Service:	100% operational.
Life Cycle Consequences:	Health and safety due to unsafe/ineffective lighting
Corporate / Consulting Reports on Subject:	N/A
Procurement Methods:	Procurement Policy – Bylaw 12-79
Financial Strategy	Refer to Financial Plan –Appendix D
Other Information or Reference Materials	PSAB 3150 documents

ASSET MANAGEMENT STRATEGY
WASTEWATER TREATMENT PLANT/SEPTAGE RECEIVING

Inventory	One (1) Wastewater Treatment Plant (WWTP) and One (1) Septage Receiving Facility located at 212 Wolf Grove Road. The WWTP was substantially completed on July 25, 2012.
Anticipated Asset Life Cycle	It is estimated that the structure will have a useful life expectancy of 75 years. This life expectancy does not include process components which are monitored, repaired and replaced as necessary on an on-going basis. Components have a lifespan of 15-40 years.
Integrated:	Not usually integrated with other infrastructure work. Whole buildings not generally replaced but periodically require major maintenance, renovation or expansion.
Condition Assessments	An outside condition assessment of the WWTP has not been completed as it was only recently constructed. Modifications to the septage receiving facility were completed in 2016 to address operational problems.
Rehabilitation and Investment Strategies:	Plant capacity and the need for future expansion based on population projections are addressed in the Water and Wastewater Infrastructure Master Plan Report and lifecycle costs are included in the Water and Wastewater Rate Study. Systems are regularly reviewed to optimize energy efficiency.
Maintenance Strategies:	Any building deficiencies are noted by municipal staff or our plant operator, OCWA, and repaired as they arise. OCWA ensures compliance with all regulatory requirements.
Desired Levels of Service:	The long term desired level of service is to achieve and continually maintain the WWTP and the Septage Receiving Facility in good condition, meet regulatory compliance and to conform to all applicable legislation i.e. Fire Code, Building Code, Accessibility Standards, etc. and where possible include, environmental and energy efficiencies, etc.
Life Cycle Consequences:	Increased deterioration of buildings and properties, health & safety concerns, inefficient operation, higher operating costs, increased municipal liability, etc.
Corporate / Consulting Reports on Subject:	• Water & Wastewater Rate Study • Water and Wastewater Infrastructure Master Plan Report • Septage Business Plan
Procurement Methods:	Procurement Policy – Bylaw 12-79
Financial Strategy	Refer to Financial Plan –Appendix D
Other Information or Reference Materials	PSAB 3150 documents

ASSET MANAGEMENT STRATEGY
MISCELLANEOUS ASSETS>$5,000

Inventory	Refer to PSAB 3150 data for description of miscellaneous assets with a historical cost value in excess of $5,000. Assets include lawn mowing equipment, library collections, signage, miscellaneous arena equipment, etc.
Anticipated Asset Life Cycle	Refer to PSAB 3150 for lifecycle details
Integrated:	Not usually integrated with other replacement needs but may incorporate technological advances, environmental regulations, operational changes and level of service changes
Condition Assessments	Visual inspection of the condition. Consideration should also be given to age, frequency and volume of use, frequency and dollar value of repairs, frequency and length of downtime, health & safety risks to residents of prolonged downtime, costs for rentals, etc.
Rehabilitation and Investment Strategies:	Replacement occurs when the asset is not performing optimally or has reached the end of its useful life. Review usage to warrant replacement. Many miscellaneous assets reported for PSAB purposes will not be replaced. If being replaced, consider all options i.e. purchasing used, leasing, seasonal rentals, refurbishing to extend life, etc.
Maintenance Strategies:	Inspections and preventative maintenance where appropriate.
Desired Levels of Service:	The desired level of service is to ensure that assets are kept in a state of good repair and if replacement is anticipated, that they are replaced or refurbished at the end of their useful life to ensure that downtime is minimized and that excessive repairs/operating costs are not incurred
Life Cycle Consequences:	Health & safety concerns, inefficient operation, higher operating costs, frequent breakdowns
Corporate / Consulting Reports on Subject:	None
Procurement Methods:	Procurement Policy – Bylaw 12-79
Financial Strategy	Refer to Financial Plan –Appendix D
Other Information or Reference Materials	PSAB 3150 documents



Service Indicators

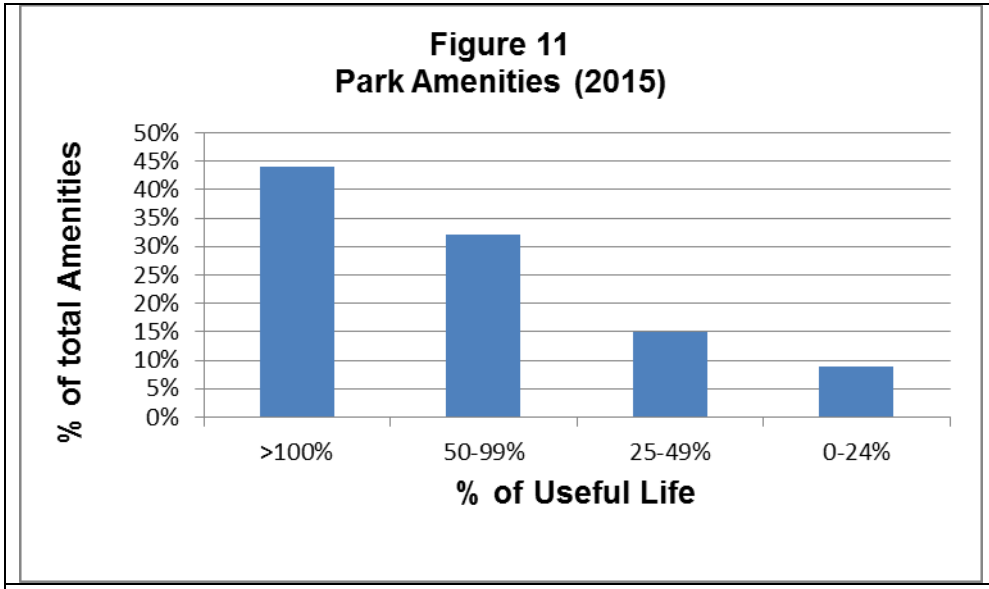
- Total past useful life (>100%) = 53 misc. assets
- Total 50-99% of useful life = 18 misc. assets
- Total 25-49% of useful life = 4 misc. assets
- 0-24% of useful life (relatively new) = 15 misc. assets

- Of the Municipality's miscellaneous assets in 2015, 53% are past their useful lives and another 27% are nearing the end of their useful lives. Significant investments in miscellaneous assets may be required in the near future depending on whether the asset is still required.

ASSET MANAGEMENT STRATEGY
PARKS AND AMENITIES

Inventory	25 Parks totaling 162.65 Acres; 14 in Almonte Ward, 4 in Pakenham Ward and 7 in Ramsay Ward: • 14 parks with amenities; 9 in Almonte Ward, 3 in Pakenham Ward and 2 in Ramsay Ward • 11 parks without amenities; 5 in Almonte Ward. 1 in Pakenham Ward and 5 in Ramsay Ward
Anticipated Asset Life Cycle	The land the park is on has an indefinite life. 44 park amenities in 14 neighbourhood/community parks have varying useful lives i.e. playstructures, basketball courts, tennis court, etc. Refer to PSAB 3150 for details.
Integrated:	Replacement/refurbishment of amenities on parkland is not usually integrated with any other infrastructure replacement but incorporates new accessibility standards, applicable legislation for construction and new technologies. New parks are generally received as part of a subdivision development. Where possible, re-development/rehabilitation of existing neighbourhood/community park amenities is done with partnerships from community members/groups.
Condition Assessments	Visual inspection of the condition and preventative maintenance where practical. Consideration should also be given to age, health & safety concerns, changing legislation and accessibility standards
Rehabilitation and Investment Strategies:	Replacement/refurbishment occurs when park equipment has reached the end of its useful life, when a health and safety risk is posed, or when changes in legislation dictate replacement.
Maintenance Strategies:	Annual playground inspections are conducted to determine the safety and condition of playground and park equipment and to determine if they conform to existing legislation.
Desired Levels of Service:	The desired level of service is to ensure that assets are kept in a state of good repair, that they are in compliance with applicable legislation and that they are replaced/refurbished at the end of their useful life.
Life Cycle Consequences:	Health & Safety, legislative and accessibility concerns
Corporate / Consulting Reports on Subject:	• Parks & Recreation Master Plan • Community Official Plan • Development Charges Study
Procurement Methods:	Procurement Policy – Bylaw 12-79
Financial Strategy	Refer to Financial Plan –Appendix D

Other Information or Reference Materials	PSAB 3150 documents



Service Indicators

- Total past useful life (>100%) = 18 amenities
- Total 50-99% of useful life = 13 amenities
- Total 25-49% of useful life = 6 amenities
- 0-24% of useful life (relatively new) = 4 amenities

- Of the Municipality's Park Amenities, 44% are past their useful lives and another 32% are nearing the end of their useful lives. Significant investments in park amenities will be required in the near future.

ASSET MANAGEMENT STRATEGY
WELLS

Inventory	5 wells known as Wells 3, 5, 6, 7 & 8 located in various locations within Almonte Ward.
Anticipated Asset Life Cycle	Although the wells themselves do not have a set lifespan, the components supporting a municipal well that are used to draw the water, monitor water levels and quality, and send it to the water distribution system have variable lifespans of between 15 and 40 years depending on the component. Refer to PSAB 3150 for component lifecycle and age.
Integrated:	Well rehabilitation is generally not integrated with other infrastructure rehabilitation.
Condition Assessments	The condition of the wells and their components are continuously monitored through the SCADA system by the Municipality's contractor, OCWA, who identifies and addresses issues as they arise in consultation with the Municipality.
Rehabilitation and Investment Strategies:	Well capacity and the need for future expansion based on population projections are addressed in the Water and Wastewater Infrastructure Master Plan Report and lifecycle costs are included in the Water and Wastewater Rate Study.
Maintenance Strategies:	The Municipality's contractor, OCWA, continuously monitors the performance of the wells on the SCADA system and identifies issues to be addressed in consultation with the Municipality to ensure compliance with provincial drinking water regulations.
Desired Levels of Service:	The wells are to be kept in good condition on a continuous basis through regular monitoring and maintenance by OCWA to provide safe drinking water to Almonte.
Life Cycle Consequences:	Increased deterioration of buildings and properties, health & safety concerns, inefficient operation, higher operating costs, increased municipal liability.
Corporate / Consulting Reports on Subject:	• Water and Wastewater Rate Study • Water and Wastewater Infrastructure Master Plan Report
Procurement Methods:	Procurement Policy – Bylaw 12-79
Financial Strategy	Refer to Financial Plan –Appendix D
Other Information or Reference Materials	PSAB 3150 documents

ASSET MANAGEMENT STRATEGY
PUMP STATIONS

Inventory	6 Pumping Stations. Refer to PSAB 3150 data for age and lifecycle.
Anticipated Asset Life Cycle	Pump Station components are generally expected to have a lifecycle of 15-40 years. System components are monitored by OCWA through the SCADA system, and necessary repairs and component replacements are undertaken as required to ensure that regulatory requirements are met and sewage spills and backups do not occur.
Integrated:	Not generally integrated with any other infrastructure replacements but may incorporate technological advances, environmental regulations, operational changes and level of service changes.
Condition Assessments	The condition of the pumping stations and their components are continuously monitored by the Municipality's contractor, OCWA, who identifies and addresses issues as they arise in consultation with the Municipality.
Rehabilitation and Investment Strategies:	Pumping station capacity and the need for future expansion based on population projections are addressed in the Water and Wastewater Infrastructure Master Plan Report and lifecycle costs are included in the Water and Wastewater Rate Study.
Maintenance Strategies:	The Municipality's contractor, OCWA, continuously monitors the performance of the pumping stations on the SCADA system and identifies issues to be addressed in consultation with the Municipality.
Desired Levels of Service:	It is necessary to keep all pumping stations in good working order to ensure regulatory compliance and to prevent overflows and sewage backups.
Life Cycle Consequences:	Health and safety issues, spills to watercourses, basement flooding, increased municipal liability
Corporate / Consulting Reports on Subject:	• Water and Wastewater Rate Study • Water and Wastewater Infrastructure Master Plan Report
Procurement Methods:	Procurement Policy – Bylaw 12-79
Financial Strategy	Refer to Financial Plan –Appendix D
Other Information or Reference Materials	PSAB 3150 documents

GLOSSARY OF TERMS
Alphabetically

BCI	Bridge Condition Index
CCTV	Closed Circuit Television
CIPP	Cure in Place Pipe
CO_2	Carbon Dioxide
CSP	Corrugated Steel Pipe
HVAC	Heat Ventilation Air Conditioning
MOE	Ministry of Environment
MTO	Ministry of Transportation
OCWA	Ontario Clean Water Agency
PSAB	Public Sector Accounting Board
RCI	Riding Comfort Index
SCADA	Supervisory Control and Data Acquisition
WWTP	Waste Water Treatment Plant