

Asset Management Plan for Water and Sewer Infrastructure and Arena/Community Centre



THE TOWNSHIP OF
BONNECHERE VALLEY

DECEMBER, 2013



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**ASSET MANAGEMENT PLAN
FOR WATER AND SEWER INFRASTRUCTURE
AND ARENA/COMMUNITY HALL**

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1.0 EXECUTIVE SUMMARY

1.1 Problem and Opportunity

In order to properly allocate the resources required to meet service levels, municipal managers, Councils and ratepayers need up-to-date useful information. This information is best described within an Asset Management Plan. Asset management is essentially a decision support tool intended to provide the information municipalities need to make the right decisions at the right time to optimize the useful life expectancy of each asset for the best overall value.

The Ontario Ministry of Infrastructure's "Building Together: Guide for Municipal Asset Management Plans" has been utilized as a template in developing the Township of Bonnechere Valley Asset Management Plan (AMP). The Township's Strategic Plan has also been considered within the Asset Management Plan. This Asset Management Plan covers a ten (10) year period and has been structured as a "living document". It is also structured to allow multiple asset types to be added in the future, including new information (e.g., Building Condition Assessments). The scope of this AMP includes Water, Wastewater and Stormwater Assets as well as one municipal building – the Eganville Arena and Community Centre.

This AMP should be revisited, re-evaluated and updated on an annual basis as part of the municipal budgeting process. It is noted that the Township retained a separate firm to assist in the completion of a Roads Asset Management Plan which is not included in this document.

1.2 Local Infrastructure Big Picture

Based on current valuation, the Township owns and operates almost \$9,000,000 in arena/community centre, and communal water and sewage system infrastructure assets that support ratepayer and Public services in the Village of Eganville and the Foymount area. Currently, the Township maintains an average level of service for the water and sewer system infrastructure.

The Eganville Arena and Eagles Nest Community Centre is a key recreational building within the Township of Bonnechere Valley. There are a number of significant building condition issues which require priority repair, restoration and/or replacement including, but not limited to, the roof membrane system, exterior cladding, ice service piping and concrete slab.

Currently, much of the Township's infrastructure is approximately halfway through its ideal useful life. To date, the Township has been proactive in completing condition assessments and planning management strategies to ensure that budget allowances are known well in advance of repairs, rehabilitation and eventual replacement and renewal of these assets.

As these assets age, preventative maintenance will extend their useful life. Annual maintenance costs will, however, gradually increase over time as these assets approach their end-of-life cycle. The Township must be diligent in monitoring these annual maintenance costs so that staff and Council can make informed decisions with respect to the timing of various inevitable capital projects for rehabilitation or replacement of problem infrastructure.

1.3 Asset Condition and Rating

It is critical that the Township have a clear understanding of the condition of their assets and how they perform at any given time. All management decisions regarding maintenance, rehabilitation and renewal revolve around these two aspects.

Asset condition reflects the physical state of the asset, which may or may not affect its performance. The performance of the asset is the ability to provide the desired level of service to customers. Generally, this can be measured in terms of reliability, availability, capacity, and meeting customer demands and needs. All of this is critical information for determining the remaining useful life of an asset, and more importantly, the timing for possible intervention steps to bring levels of service back to the desired standard.

Aside from the physical condition of an asset, there are other “intangible” factors that also need to be considered to determine overall condition and remaining useful life. These factors might include:

- Technical advances which might make the asset obsolete.
- Compliance – to what extent does the asset meet design and operational requirements?
- Functionality – does the asset have the ability/capacity to meet community expectations/growth/service levels?
- Economic life – the cost of continuing to operate/maintain/repair/rehabilitate the asset versus its full replacement.

A widely recognized approach for condition assessments focuses on collecting performance data in order to manage the risks associated with critical assets. Once an asset’s baseline performance data has been established, it is monitored to determine how that asset is operating. Condition grading standards can be adopted using this approach. The Township has adopted a practical holistic Asset Condition Rating System for the AMP which includes Poor, Fair, Average and Good condition ratings.

1.4 Water System Report Card

Asset Group	Replacement Value	Condition Estimate
Water Treatment Plant	\$8,750,000	Average
Standpipe	\$1,000,000	Good
Water Distribution System	\$5,308,550	Fair

The Water Treatment Plant and Standpipe are in Average to Good condition overall. The water distribution system is in Fair condition overall. It is important to note that 65% of the watermains (150 and 200 mm) are constructed from Asbestos Concrete. This pipe material has an Ideal Service Life of approximately 70 years; however, asbestos concrete pipes have been known to fail earlier as compared to other industry standard materials such as PVC. Most of these asbestos concrete watermains are well past the mid-point of their Ideal Service Life and planning for replacement or rehabilitation of these pipes should be a Township priority. The replacement value of Asbestos Concrete watermains in Poor or Fair condition is approximately \$2,352,000.

Recommendations

The Township should be annually reviewing its history of watermain breaks and continuing to compile new records of watermain breaks and any operational problems. This data should be entered into the Municipal GIS so that it can be analyzed for break patterns. Break records should include the location, time of year, pipe size, pipe material, observed soil conditions and cause of failure. Careful examination of these records will allow Township staff to make informed decisions with respect to watermain renewal or replacement activities. Trenchless technologies for watermain rehabilitation may also be investigated as opposed to more expensive open cut watermain replacement. Opportunities to coordinate watermain rehabilitation with road reconstruction and other related capital projects should also be examined.

1.5 Sanitary Sewer Collection System Report Card

Asset Group	Replacement Value	Condition Estimate
Sewage Treatment Plant	\$6,750,000	Average
Chemical Building	\$450,000	Good
Biosolids Building	\$675,000	Good
Pump Stations	\$1,900,000	Good
Sanitary Sewer Collection System	\$4,640,391	Fair

The Sewage Treatment Plant is in Average condition overall with some major building systems past the mid-point of their Ideal Service Life, including process mechanical, building mechanical, electrical and structural/architectural systems. The Chemical Systems Building and Biosolids Dewatering Facility are in Good condition overall as these have been recently constructed and renewed. The South Side, North Side, Raglan Street and Mill Street pumping stations are also in Good condition overall since they have also recently been re-furbished.

Sanitary sewer mains are in Fair condition overall with the majority of these pipes past the mid-point of their Ideal Service Life. Maintenance holes and sanitary sewer laterals/services are also in Fair condition overall. It is important to note that 86% of the sewer mains are constructed from Asbestos Concrete. This pipe material has an Ideal Service Life of 70 years; however, asbestos concrete pipes have been known to fail earlier as compared to other industry standard materials such as PVC. Planning for the rehabilitation or replacement of these pipes should be a consideration; however, the collecting of condition assessment information should be a higher priority in order to confirm their actual physical conditions. The replacement value of Asbestos Concrete sanitary sewers in Poor or Fair condition is approximately \$2,643,000.

Recommendations

The Township should implement a Closed Circuit Television (CCTV) condition assessment program for its entire sanitary sewer collection system to validate pipe condition. This work program should be completed over a 5-year period beginning in 2014. Maintenance holes should be included in this assignment as it proceeds. Collection of this data will allow staff to make informed decisions with respect to priority replacement or rehabilitation of sanitary sewers. History of breaks and interviews with Public Works staff to determine operational

issues will also constitute a component of this exercise. History of breaks and operational issues should be entered into the Municipal GIS so that it can be used as a decision support tool for capital planning. Break records should include the location, time of year, pipe size, pipe material, observed soil conditions and cause of failure. Trenchless technologies for sanitary sewer rehabilitation may also be investigated as opposed to more expensive open cut sewer replacement. Opportunities to coordinate sanitary sewer rehabilitation with road reconstruction and other related capital projects should be examined.

1.6 Storm Sewer System Report Card

Asset Group	Replacement Value	Condition Estimate
Storm Sewer System	\$9,006,719	Poor to Fair

Overall, the Storm sewers are in Poor to Fair condition overall with the majority of these pipes approaching the mid-point of their Ideal Service Life. The oldest of these sewer pipes date to the mid-1950s. Storm maintenance holes and catch basins are also in Fair condition overall. Planning for the rehabilitation or replacement of this infrastructure should be a consideration; however, the collecting of condition assessment information should be a priority in order to confirm their physical and structural condition so that the timing for its renewal can be more accurately determined.

Urban, rural and driveway culverts are generally in Poor condition overall; however, this is mainly due to the fact that a condition score has been generated based solely on estimated age and material. In this instance, the Township did not have any significant installation date information for its culverts. It was determined through consultation with Public Works that an Ideal Service Life of 25 years would be used for corrugated metal culverts. Verification of the condition of these culverts will occur as annual maintenance and inspections are scheduled. Corrugated PVC and corrugated HDP culverts have been assigned an Ideal Service Life of 50 years.

Culvert replacement is typically undertaken during road improvement projects or when they are showing signs of failure or have failed. The Township should continue to follow this practice but monitor their performance as part of regular Public Works and Roads operations and maintenance programs. Special attention should be placed on monitoring the condition of larger storm culverts.

Recommendations

The Township should implement a CCTV condition assessment program for its entire storm sewer system to validate pipe condition. This work program should be completed over a 5-year period beginning in 2014. Maintenance holes should be included in this assignment as it proceeds. Collection of this data will allow staff to make correct decisions with respect to priority replacement or rehabilitation of storm sewers. History of breaks and interviews with Public Works staff to determine operational issues will also constitute a component of this exercise. History of breaks and operational issues should be entered into the Municipal GIS so that it can be used as a decision support tool for capital planning. Break records should include the location, time of year, pipe size, pipe material, observed soil conditions and cause of failure. Trenchless technologies for storm sewer rehabilitation may also be investigated as opposed to

more expensive open cut sewer replacement. Opportunities to coordinate storm sewer rehabilitation with road construction, sanitary sewer replacement, and other related capital projects should be examined.

1.7 Arena and Community Centre Report Card

Asset Group	Replacement Value	Condition Estimate
Arena & Community Centre	\$5,789,000	Fair

The Eganville Arena and Community Centre is in Fair condition overall. The Mechanical, Electrical and Structural systems are in Fair condition. Some of the Architectural and Structural systems, including the roof membrane system, are in Fair to Poor condition.

In August, 2012, a review of the Eganville Arena and Community Centre roof membrane system was undertaken to provide an opinion of probable cost for its replacement. The estimate of its overall condition was determined to be Poor and two (2) options for its replacement or renewal were provided. Option 1 was a complete roof replacement at an estimated cost of \$580,000, plus applicable taxes. Option 2 was a retrofit of the existing roof system at an estimated cost of \$450,000, plus applicable taxes.

A Type II Condition Audit Report of the Eganville Arena and Community Centre was also undertaken in July, 2013. This included an Ontario Fire Code Review. The Ontario Fire Code Review resulted in further Township Fire Prevention Inspections completed by the Bonnechere Valley Fire Department in August, 2013. This resulted in a number of recommended priority repairs for 2013/2014 totaling \$150,000.

Based on these investigations, building audits and condition assessments, an approximate total of \$800,000 in priority repairs have been identified for 2013/2014. A further replacement of the Exterior Cladding and Ice Service Piping and Concrete Slab is necessary over the next 5 years with an estimated capital cost of approximately \$700,000.

Cumulative expenditures related to priority repairs and capital projects for the arena/community centre over the short term (0-5 years) total approximately \$1.75 million dollars. Over the long term (0-20 years) these cumulative costs escalate to approximately \$2.2 million dollars.

1.8 Funding Report Card

Funding of water and sewer infrastructure rehabilitation remains a challenge for the Township. The Township is midway through a plan to increase user fees by 46% over a five year period in order to provide funds for debt repayment and establish replacement reserves. The Township is setting, as a priority, preventative maintenance to improve efficiency and to identify infrastructure deterioration before a system failure can occur.

It has been determined that to fully pay for the infrastructure life cycle costs through water and sewer user fees is beyond the economic ability of the current users of the system. Funding will continue to be the most significant challenge in reaching sustainable core infrastructure services.

Funding for the continued operation of the Eganville Arena and Community Centre will rely on the municipal tax base. Infrastructure rehabilitation must rely on debt financing. It has been determined that tax increases to sustain infrastructure to desired service levels is beyond the affordability of taxpayers when considered with the property tax increases which will be required for core services such as policing and road infrastructure.

2.0 INTRODUCTION TO ASSET MANAGEMENT

2.1 What Is Asset Management?

The following is an excerpt from the Ontario Ministry of Infrastructure “Building Together: Guide for Municipal Asset Management Plans”:

“Asset management planning is the process of making the best possible decisions regarding the building, operating, maintaining, renewing, replacing and disposing of infrastructure assets. The objective is to maximize benefits, manage risk, and provide satisfactory levels of service to the public in a sustainable manner. Asset management requires a thorough understanding of the characteristics and condition of assets, as well as the service levels expected from them. It also involves setting strategic priorities to optimize decision-making about when and how to proceed with investments. Finally, it requires the development of a financial plan, which is the most critical step in putting the plan into action.”

All municipalities own, operate, and maintain a wide variety of above and below ground infrastructure assets. These assets may include (but are not limited to) roads, water distribution networks, sewage collection systems, bridges, vehicle and fleet equipment, parks and recreation facilities and other municipal buildings. Each category of asset is typically expected to function efficiently and effectively for many years; although there are numerous challenges in achieving these goals based on financial constraints, lack of technical resources, missing original date of installation, changing political agendas, etc. For many municipalities similar to the Township of Bonnechere Valley, assets were initially built and installed in the 1950s, 60s and 70s and have passed their mid-life expectancy.

A key issue facing many local governments is the management of aging infrastructure assets that provide needed and desired services to the community. In addition, the Public has an increased expectation of service levels and is less tolerant of issues such as water supply interruptions, sewer backups and poor road conditions. The public presumes that local government will be accountable and adopt a businesslike approach in managing their assets.

2.2 Why Do We Need an Asset Management Plan?

In order to properly allocate the resources required to meet service levels, municipal managers, staff and Councils need up-to-date useful information. This information is best described within an Asset Management Plan (AMP). Asset management is essentially a decision support tool intended to provide the information municipalities need to make the right decisions at the right time to optimize the useful life expectancy of each asset for the best overall value.

An Asset Management Plan is also a summary document which identifies the technical and financial needs of assets and provides information well in advance of major asset renewal, rehabilitation or replacement so that a municipality can plan for these major projects and budget accordingly. Preventative maintenance programs also extend an assets lifecycle and should be incorporated into an AMP. A “preventative” approach to asset maintenance is generally more cost effective than “reactive” maintenance over the long term. In conjunction with a preventative maintenance program, it is equally important that an AMP have a risk management component to identify priorities and manage the risk of failure.

Each municipality and its assets are unique and the asset management plan needs to be tailored to fit its size, priorities, composition of assets, geographic setting, current and projected asset condition and performance, and anticipated service levels. The end goal of the asset management program is to build, maintain and operate infrastructure cost-effectively, provide value to the customer for the services delivered, and improve the credibility and accountability of the municipality.

2.3 Link to Strategic Plan

In 2004, the Township of Bonnechere Valley (Township) adopted a Strategic Plan which is intended to be a “living” document for guiding the Township into the future, provide a “road map” for employees, a reference document for taxpayers and community volunteers, and a decision-making template for Council. The Mission of the Township of Bonnechere Valley is:

“To make our community an affordable, efficient place where people choose to live, work, visit and participate in a culture that fosters communication, rural lifestyle, personal growth, and healthy commerce.”

As a matter of policy, the Strategic Plan also notes that:

“All services offered (directly or contracted out) address necessary aspects of the every day life of taxpayers, and are characterized by Council’s responsibility for dependability, reliability, responsiveness and efficiency. Responsibility for all customer service remains with Council”

These statements include core services which relate to the Township’s vision contained in the Strategic Plan. Many of these services depend on and are delivered via municipally-owned assets and infrastructure. These “everyday” services include but are not limited to roads, water and sewer services, fire protection, parks and recreation, sidewalks and waste management. Many of these services are further supported by municipal facilities and fleet vehicles (i.e., municipal office, roads, fire department, arena/hall, water and sewage treatment plants).

Although the Strategic Plan notes that one of the Township’s strengths is in providing basic municipal services, it also identifies a number of issues which are a threat to achieving its vision. These threats include:

- old and deteriorating infrastructure;
- increasing infrastructure costs across the board;
- levels of service decreasing due to lack of funding from Provincial and Federal sources;
- higher taxes.

Subsequent to this, the Strategic Plan identifies opportunities which include:

- extending existing communal services to new development areas (particularly in the Village of Eganville);
- maintaining a good road system to encourage economic growth and tourism;
- working with the Provincial and Federal governments to maximize funding in order to keep the current services and improve infrastructure to required standards;
- long range planning.

With these factors in mind, the Strategic Plan identifies a series of seventeen (17) overarching goals, which once implemented, will result in Achievement of the Vision. Each goal is further assigned to one of six (6) municipal departments or in some cases assigned to multiple municipal departments. No less than seven (7) of these goals relate directly to infrastructure and asset management. The following seven (7) goals have been assigned to Public Works, Sewage and Water, Waste Management or a combination of these three (3) departments:

- “Excellence in quality customer service is our business.”
- “We know and manage our assets effectively and efficiently.”
- “We meet or exceed the applicable Provincial standards for performance under current legislation.”
- “We regularly evaluate services against objective standards, and how they are delivered.”
- “We serve the Public’s need for quality of life.”
- “We recognize that what we do has a direct effect on health and safety of the public and Township staff.”

The final component of the Strategic Plan is a series of appendices which list the Critical Success Factors that each of the Township’s six (6) departments must achieve in order to meet all goals listed and realize the Township’s Vision. Without reiterating these detailed Critical Success Factors, it is understood that they are asset management oriented to a large degree.

Based on the information presented, it is clear that asset management is clearly linked to Council’s strategic objectives and fundamental to the success of the goals described in the Strategic Plan.

2.4 Township of Bonnechere Valley Asset Management Plan

This AMP is intended to act as a guiding framework document which has been structured to allow multiple asset types to be added in the future, including new information (e.g., Building Condition Assessments). The scope of this AMP includes Water, Wastewater and Stormwater Assets as well as one municipal building – the Eganville Arena and Community Centre (Eagles Nest).

The Financial Strategy section of this AMP was prepared by Chartered Accountants who were contracted directly by the Township. The Township also retained a separate firm to assist in the completion of a Roads AMP which does not form part of this document, however, roads information can be incorporated in the future, as needed.

In preparing the AMP, numerous other published municipal AMPs, Best Practice documents and fundamental asset management principles have been reviewed. Some of this information has been adapted for this report and has been incorporated. Please refer to Section 9.0 for a comprehensive list of these reference material documents.

The Ontario Ministry of Infrastructure's "Building Together: Guide for Municipal Asset Management Plans" (Guide) has been utilized as a template in developing the AMP. This AMP meets the requirements of the Guide and has been structured based on Section 3 of the Guide. The Township's AMP covers a ten (10) year period and has been designed as a "living document". The Township's AMP is intended to be revisited, re-evaluated and updated on an annual basis as part of the municipal budgeting process.

The following is a list of background information provided by the Township in developing the AMP:

- *Township of Bonnechere Valley Roads Needs Study, prepared by McIntosh Perry dated March 10, 2010;*
- *Township of Bonnechere Valley Strategic Plan 2004, prepared by the Delfi Group;*
- *County of Renfrew Official Plan, approved June 16, 2003;*
- *Village of Eganville Water and Sewage Systems Infrastructure Management Strategy – 2010 Update, prepared by J.L. Richards & Associates Limited;*
- *Township of Bonnechere Valley Water & Sewage Department Financial Plan Summary 2012-2017, revised December 12, 2011;*
- *Township of Bonnechere Valley Public Sector Accounting Board Policies and Tangible Capital Assets;*
- *Township of Bonnechere Valley Municipal Geographic Information System (GIS);*
- *Township of Bonnechere Valley Cartograph Maintenance Management System.*

3.0 STATE OF LOCAL INFRASTRUCTURE

Based on current valuation, the Township owns and operates almost \$9,000,000 in arena/community centre, and communal water and sewage system infrastructure assets that support ratepayer and Public services to the Village of Eganville and Foymount area. Currently, the Township maintains an average level of service for the water and sewer system infrastructure. These assets are approximately midway through their life cycle. The Township recognizes this and has been proactive in completing condition assessments and planning management strategies to ensure that budget allowances are known well in advance of repairs, rehabilitation and eventual replacement and renewal of these assets. This strategy is essential to building reserve funds, minimizing the financial burden on the Township and maximizing its overall investment in core water and wastewater infrastructure.

The asset inventory information contained in this section of the AMP has been developed based on background information and reports provided by the Township, interviews with Public Works staff and data extracted from the Township's Geographic Information System (GIS) and

Cartograph Maintenance Management System (MMS). An overview of the Township's water and sewer system assets, and the arena and local community centre are described below.

3.1 Water System

The Township provides municipal water to all residents of the Village of Eganville which is clean and safe to drink and meets all provincial legislation and standards. In general, major components of the distribution system are approximately 35 years old or less. There is minimal service disruption and service levels meet current and anticipated consumption, and fire protection. Annual operating, maintenance and renewal of the water system infrastructure is funded through consumption-based user fees, flat rate user fees, transfers from the Eganville Generation Corporation, Provincial/Federal Assistance Programs, Sludge Disposal Revenue, new debt and transfers from reserve funds.

An overview of the Eganville communal water supply and distribution system is presented in Drawing No. 1. The system generally consists of a surface Water Treatment Plant (WTP), an underground network of distribution piping and a potable water storage steel standpipe. The distribution system consists of approximately 13 km of underground piping as well as a significant number of valves, hydrants and service laterals to individual properties. The WTP treats raw water from the Bonnechere River and conveys it into the distribution system which generally consists of pipes ranging in diameter from 150 mm (6") to 200 mm (8"), with a few pipes that are 250 mm (10") diameter. Pipes are generally either, PVC, Ductile Iron or Asbestos Concrete. The majority of the water distribution system piping is of the 1970's vintage with the exception of some new pipes replaced since then.

There is also a 16 m high x 10.4 m diameter water standpipe included in the distribution system and located at a relatively high elevation. The standpipe provides pressure equalization within the distribution system and the system is also fed from the tank when the high lift pumps at the WTP are cycled off. The standpipe was constructed in the mid to late 1970s along with the majority of the system. It also includes a small underground concrete chamber that houses some valving for the fill and drain pipes.

The WTP was constructed in 1990 and includes an approximate 800 m², one-storey building which houses all of the mechanical and process treatment equipment used to treat the raw water to acceptable Provincial standards. There are a number of major water system infrastructure components located in the WTP building which has been accounted for in this AMP.

3.2 Sewage System

The Township provides sewer service within the Eganville urban centre which maintains public health and safety, with minimal service disruption and impact to the environment and property. Annual operating, maintenance and renewal of the sewage system infrastructure is generally funded through user fees. An overview of the Eganville communal sewage system is presented in Drawing No. 2. The system generally consists of a gravity collection system, four (4) sub-area pump stations and a Sewage Treatment Plant (STP).

The gravity collection system consists of approximately 11 km of underground pipe, ranging in diameter from 200 mm (8") to 400 mm (16"). Pipes are generally either PVC or Asbestos