TOWNSHIP OF BONFIELD

2017 Asset Management Plan

Small Community, Big Heart

CONTENTS

EXECUTIVE SUMMARY

In response to the Ministry of Infrastructure's release of a ten–year infrastructure plan, "Building Together", which focuses on building a more standardized and consistent approach to municipal asset management planning, the Township of Bonfield ("Bonfield" or the "Township") has taken a pro-active approach in preparing a detailed Asset Management Plan ("AMP") to seek provincial capital funding. As the Township's municipal assets continue to age, it becomes increasingly important to go through a formal process determining how a group of assets is to be managed over a period of time to help ensure safety standards, regulations, and expected levels of service continue to be met given the Township's financing capabilities.

The Township's AMP is a strategic document stating the characteristics and condition of infrastructure assets, levels of service expected from them, planned actions to ensure the assets are providing the expected level of service and financing strategies to implement the planned actions. The overall intent of the AMP is to help the Township ensure investments are made at the right time, future repair and rehabilitation costs are minimized, and municipal assets are being appropriately maintained.

1.0 INTRODUCTION

The Province of Ontario's Ministry of Infrastructure emphasizes that a municipality's infrastructure investment is vital to building a strong economy and community. Public infrastructure including roads, water and sewer systems, bridges, and buildings are central to a town's prosperity and quality of life. Without these core assets, the viability of a municipality, from an economic, health, and environmental perspective, would be in jeopardy.

Asset Management is the process of determining how to best build, operate, maintain, renew, replace, and dispose of infrastructure assets. An Asset Management Plan ("AMP" or the "Plan") is developed for the management of one or more infrastructure assets within the municipality that combines multi-disciplinary management practices, including both technical and financial practices, over the lifecycle of the asset(s) to a specified level of service in the most cost-effective manner. The intent of an AMP is to maximize benefits and reduce risks, while providing a satisfactory level of service to the community in a sustainable manner.

An AMP also incorporates the existing preventative maintenance and risk management programs to preclude risk of failure. The preventative maintenance component ensures that the day-to-day wear and tear on the asset is dealt with to ensure that the asset can reach its expected lifecycle and the risk management component ensures that risk is managed through due diligence.

In general, the Asset Management process defines:

- What we own – Inventory
- What our inventory is worth – Valuation
- Where our inventory is located – Geographical Information System
- How we operate – Service Level
- The condition of our inventory – Risk / Consequence of Failure
- What we need to do – Construct, Maintain or Replace
- How much will it cost and how will it be funded – Financial Plan

AMPs enhance both the budgeting and planning processes by modeling future capital costs for the upcoming ten years. This will aid the Township of Bonfield ("Bonfield" or the "Township") in understanding future budget pressures and assist in providing options on closing any infrastructure gaps. As well, a fully implemented plan will provide real life Township specific data on maintenance and operations costs allowing staff to generate tools to develop lifecycle costing and long-term performance measures. The plan will also give direction on proactive preventative maintenance and rehabilitation which will ultimately lower overall costs.

KEY BENEFITS OF AN ASSET MANAGEMENT PLAN

Specific benefits associated with an AMP include:

- Better decision making regarding resource allocation;
- More effective communications with ratepayers, elected officials, financial rating organizations and regulatory agencies;
- More consistent levels of service to the public;
- Better risk management practices to the municipality;
- More effective financial planning;
- Reduced lifecycle costs;
- More efficient data management;
- Facilitates the establishment and subsequent implementation of policy objectives and the related measurement of performance;
- Avoids potential problems and crises; and
- Results in positive institutional change.

ESSENTIAL COMPONENTS OF AN ASSET MANAGEMENT PLAN

In order for an AMP to fulfill the principles of asset management, the following essential components must be contained in the overall plan:

I. ASSET VALUE:

All municipal infrastructure assets have a monetary value which has been determined by actual capital value or best estimate. This was completed through the implementation of the Public Sector Accounting Board ("PSAB") 3150 - Tangible Capital Asset.

II. LIFECYCLE MANAGEMENT:

All assets have a limited life expectancy and to some degree the rate of deterioration can be estimated. A decision made at any point in time in the lifecycle of an asset has an effect on the remaining life and may have operational implications and related costs.

III. SUSTAINABILITY:

In terms of asset management, sustainable development has been defined as "meeting the needs of the present generation without compromising the ability of the future generations to meet their own needs". This definition has been extracted from the "National Guide to Sustainable Municipal Infrastructure". The AMP needs to identify a financial plan over the long term to ensure that sufficient funds are available. These funds provide the resources required to operate, rehabilitate, dispose and ultimately replace the asset at the optimal time with the intention of achieving the lowest lifecycle cost.

IV. INTEGRATION OF TECHNICAL AND FINANCIAL PLANS:

The technical plan must minimize lifecycle costs for the infrastructure while maintaining an adequate level of service at the lowest possible level of risk. The financial plan must identify the financial investment required per year for each asset over the long term, including any larger than normal expenditures to meet the requirements of the technical plan. Ideally, the two plans should be integrated so the relationship between the level of service and the cost can be quantified. The Asset Management Strategies included within this Plan integrate the financial investment level required to the level of service. The technical and financial relationship may change from time to time depending on the outcome of asset condition assessments.

V. RISK ASSESSMENT:

Risk should be managed in any decision making process. The owner of the assets should analyze and document acceptable risk tolerance. In the Township's case, the probability of failure is taken into account while the condition of the asset is being analyzed. The condition survey leads to determining the rate of failure and the consequences of such failure. Risk factors can include financial, environmental, regulatory, legal, and public health and safety.

VI. PERFORMANCE MEASUREMENT:

To optimize an AMP, performance of the assets and rehabilitation strategies should be monitored regularly and adjustments should be made at the appropriate stage in the asset lifecycle to achieve an acceptable balance between cost and the performance (level of service). Bonfield can take advantage of tools provided by various organizations including Ontario Good Roads Association ("OGRA"), Ontario Water Works Association ("OWWA"), and Ontario Recreation Facilities Association ("ORFA"), and will be able to utilize performance measurements established as part of the Municipal Benchmarking Network Canada ("MBNCanada").

1.1 TOWNSHIP OF BONFIELD'S STRATEGIC PLAN

The Township of Bonfield adopted an Economic Development Strategic Plan in July 2003 and is committed to ensuring that it will be used to guide their actions and decisions. The Strategic Plan was developed to help the Township chart a future course of action to ensure the municipality's effectiveness in the long-run, provide a decision-making framework, and facilitate prioritizing limited resources and capital expenditures in an environment of competing interests. The Strategic Plan outlines where efforts should be focused and indicates what needs to be done in order to start moving in the direction of the preferred future.

The Economic Development Strategic Plan identifies five strategic objectives that reflect the community's priorities:

1. **ENVIRONMENT –** ensure that the clean air and lakes are sustained for the use and enjoyment of future generations.
2. **HEALTH & RECREATION –** provide a safe and healthy environment for all citizens.
3. **ECONOMY –** work to develop a strong local economy that is capable of providing sustainable employment and the infrastructure that a growing vibrant community needs.
4. **LEADERSHIP –** ensure that local leadership continues to be supportive of the community's values and goals.
5. **HERITAGE –** promote and recognize the long, rich history of the Township of Bonfield.

The strategic objectives outlined are heavily dependent on the Township's infrastructure. The Township's infrastructure assets support the economic activity of the community and improve the quality of life of its residents. These assets are vital to the prosperity and sustainability of Bonfield and to achieving our strategic objectives.

Without appropriate and adequate infrastructure, Bonfield would not be able to attract the businesses, tourists, and residents that will support a thriving community. Attraction of business, tourism, and residential development is essential to the sustainability of a community.

1.2 IMPACT ON PLANNING AND FINANCIAL BUDGETING

The AMP has a significant impact on the planning and financial budgeting processes, which are dependent on each other. The AMP identifies the timing for asset renewal, asset maintenance, asset replacement, additions and/or disposals, and the associated costs. This directly ties into the planning and financial budgeting by providing the knowledge of the timing and magnitude of future investments required to operate, maintain, renew, and acquire assets. While the AMP clearly outlines the timing and costs to maintain infrastructure assets at a certain level and condition, the capital and operating budgets ensure the acquisition and management of assets is linked to council goals and strategies, community service expectations, growth and demand projects, asset life-cycle management, and operating and maintenance programs. In addition, the AMP will outline any funding shortfalls or additional funds required to be raised to maintain assets at desirable conditions.

1.3 PURPOSE OF THE ASSET MANAGEMENT PLAN

The primary objective of an AMP is to maximize benefits, control risks, and provide a basis to assist in ensuring a provision of a satisfactory level of service to the community in a sustainable manner. Infrastructure management ensures that the Township is capable of providing the desired level of service to support attaining our ultimate goals.

1.4 TOWNSHIP OF BONFIELD'S INFRASTRUCTURE ASSETS

For the Township of Bonfield, the infrastructure assets of particular significance include roads, bridges and culverts, buildings, machinery and equipment, land, land improvements, and vehicles. These infrastructure assets present particular challenges where financing can be large and timing for renewal can cause significant peaks and troughs in expenditures.

1.5 DEVELOPMENT OF THE ASSET MANAGEMENT PLAN

The Township hired an external third party to help assist in preparing the AMP. The AMP covers a ten year period and used the following resources:

- Economic Development Strategic Plan (July 2003)
- Official Plan (April 2013)
- Operating Budget (2017)
- Road Needs Study (December 2016)
- Bridge Management Study (October 2016)
- Building Assessment (November 2017)
- Audited Financial Statements

1.6 EVALUATION AND IMPROVEMENT OF THE ASSET MANAGEMENT PLAN

Bonfield has clearly defined actions in place for evaluating and improving the Township's AMP. The Township will engage in the following activities to improve its AMP:

- Maintaining the mandatory bridge assessment studies every two years to identify current and future needs
- Completing an engineered survey of the Township's buildings to improve the accuracy of the financial forecast figures
- Inspecting entrance and cross culverts for inclusion in the AMP
- Initiating of a complete roads condition assessment which will identify road maintenance / repair / replacement needs every 5 years
- Annually testing to determine the condition of infrastructure in order to forecast their remaining useful life and determine the timing for replacement in the capital forecast
- Defining measurable goals regarding the levels of service and life expectancy

Note, the rate of progress of implementing these actions will depend on available resourcing, as well as prioritization within the larger mandate of the implementing organizations. The AMP will be updated upon completion of each of the identified activities and will be reviewed once per term of Council.

2.0 STATE OF LOCAL INFRASTRUCTURE

This section will identify the current state of the Township's infrastructure including:

- Asset types and quantity / extent;
- Asset value, including financial accounting and replacement cost;
- Asset age distribution and asset age as a proportion of expected useful life; and
- Asset condition.

2.1 ASSET TYPE AND QUANTITY

The Township owns the following major assets:

ASSET TYPE	QUANTITY / EXTENT
Roads	Approximately 106 kilometers, including a mix of gravel roads (69 kilometers), surface-treated roads (33 kilometers), and hot mix asphalt paved roads (4 kilometers)
Bridges	6 bridge structures
Culverts	10 culvert structures
Buildings	9 buildings and facilities
Machinery and Equipment	**TBD**
Land and Land Improvements	Approximately 209 square kilometers
Vehicles	**TBD**

The Township was unable to identify the quantity / extent of their current machinery and equipment and vehicles. These items remain under consideration within the AMP document.

2.2 ASSET VALUE

Outlined below are the financial accounting valuations and replacement cost valuations for each of the Township's asset types. The financial accounting valuation utilizes historical costs and depreciation assumptions. The replacement cost is forward-looking and accounts for expected inflation, changes in technology, and other factors.

ASSET TYPE	FINANCIAL ACCOUNTING VALUATION	REPLACEMENT COST VALUATION
Roads	Approximately $4.2 million	Approximately $22.8 million
Bridges		Approximately $7.6 million Estimated value of all bridges and culverts if reconstructed is approximately $9.6 million
Culverts		
Buildings	Approximately $1.6 million	Approximately $5.3 million
Machinery and Equipment	Approximately $420,000	**TBD**
Land and Land Improvements	Approximately $410,000	**TBD**
Vehicles	Approximately $430,000	**TBD**

The Township was unable to identify the replacement cost valuations for the Township's machinery and equipment, land and land improvements, and vehicles. These items remain under consideration within the AMP document.

2.3 ASSET AGE AND USEFUL LIFE

The average age of Bonfield's asset types, and each asset type's age as a proportion of its useful life are outlined in the chart below.

ASSET TYPE	AVERAGE ASSET AGE	ASSET AGE AS A PROPORTION OF USEFUL LIFE
Roads	**TBD**	**TBD**
Bridges	71 years	143%
Culverts	37 years	74%
Buildings	23 years	38%
Machinery and Equipment	**TBD**	**TBD**
Land and Land Improvements	Indefinite	Not Applicable
Vehicles	**TBD**	**TBD**

The Township was unable to identify the average asset age for the Township's roads, machinery and equipment, and vehicles. Without the average age of these assets, the asset age as a proportion of useful life was unable to be determined. These items remain under consideration within the AMP document.

2.4 ASSET CONDITION

Bonfield's infrastructure assets present particular challenges where financing can be large and timing for renewal can cause significant peaks and troughs in expenditures.

On a cyclical basis, detailed and broad condition assessments (for example, Roads Needs Study) are completed based on industry standards for the asset class. For the purpose of Asset Management planning, the asset condition information will be updated when the broad assessments are completed for the asset class.

ASSET TYPE	METHOD USED TO ASSESS CONDITION	OVERALL ASSET CONDITION RATING
Roads	Roads Needs Study performed every 5 years	Very Good
Bridges	Bridge Management Study performed bi-annually	Fair
Culverts	Bridge Management Study performed bi-annually	Fair
Buildings	Building Assessment	Good
Machinery and Equipment	**TBD**	Fair
Land and Land Improvements	Site Inspections	**TBD**
Vehicles	**TBD**	**TBD**

The Township was unable to identify the method used to assess the condition of their machinery and equipment and vehicle assets. An overall asset condition rating was also unable to be provided for the

Township's land and land improvements and vehicle assets. These items remain under consideration within the AMP document and will be updated upon identification and completion of the broad condition assessments.

CONDITION RATING

The physical condition of the Township's assets are assessed at a point in time using various methods of assessment, depending on the type of asset.

RATING	RANGE	DESCRIPTION
Very Good	81 – 100%	**Fit for the future.** Well maintained, excellent condition, new or recently rehabilitated.
Good	61 – 80%	**Adequate.** Acceptable, generally approaching mid-stage of expected service life.
Fair	41 – 60%	**Requires attention.** Signs of deterioration, some elements exhibit deficiencies.
Poor	21 – 40%	**At risk of affecting service.** Approaching end of service life, condition bellow standard, and large portion of system exhibits significant deterioration.
Critical	0 – 20%	**Unfit for sustained service.** Beyond expected useful life, widespread signs of advanced deterioration, some assets may be unusable.

3.0 DESIRED LEVELS OF SERVICE

Bonfield has levels of service for each of its asset classes, which focus on meeting regulatory requirements and community satisfaction. Levels of service include:

a. **Target Condition:** what properly functioning assets look like and achieve
b. **Performance Measure:** how the target condition is measured
c. **Target Performance:** the minimum performance or condition threshold of an asset before repair, replacement, or maintenance is required and/or the timeframe to restore the asset to proper performance

This section presents levels of service for assets as they are today in Bonfield as a starting point for future improvements. Levels of service for each Asset are described in section 3.1 below. Most asset classes currently have at least a basic level of service defined; however, not all assets have been covered.

3.1 BONFIELD'S PERFORMANCE MEASURES AND CURRENT FUNCTION RELATIVE TO TARGET PERFORMANCE

Levels of service within the Bonfield have been adopted through a number of documents, developed in the industry and internally, focusing primarily on technical requirements that meet generally expected levels of operation and safety:

- Municipal Performance Measurement Program
- Provincial Minimum Maintenance Standards for infrastructure assets, including roads, bridges, buildings, etc.

The implementation of a formal Municipal Performance Measurement Program (**"**MPMP**"**) provides taxpayers with useful information based on service delivery and municipalities with a tool to improve services over time. The MPMP assesses how well the Township performs when providing goods and services and assists in identifying potential areas for improvement. The goal is to find an optimal balance between efficiency and effectiveness in delivery of services. Going forward, this type of assessment not only provides a basis for resource and program management decisions, but also provides key financial information about the Township's level of service.

Historically, a significant portion of activities have been provided at a 'best we can do with what we have' basis. As such, there is further effort required to address and formally define levels of service for all assets, especially from a community/customer perspective.

ASSET	PERFORMANCE MEASURE	CURRENT FUNCTION	TARGET PERFORMANCE
Roads	Roads needs studies, which includes a condition rating Provincial maintenance standards	Condition assessed as "Very Good"; however, per the most recent Roads Needs Study, repair and renewal/rehabilitation required.	Well-functioning roads that are smooth, clean, safe, durable, well lit, and drain well. Implementation of a road and roadside preventative maintenance program.
Bridges and Culverts	Bridge management studies Provincial standards for bridges and culverts	Repair and renewal/rehabilitation required to bring the Township's bridges and culverts to a "Good" asset condition.	Bridges and culverts that are stable and in a state of good repair, comply with provincial regulations, and have unobstructed flow through the structures.
Buildings	Building assessments	Condition assessed as "Good"; however, per the most recent Building Assessment, repair and renewal/rehabilitation required.	Well-functioning buildings that provide reliable and safe access and amenities. Mechanical and electrical components perform as designed.

ASSET	PERFORMANCE MEASURE	CURRENT FUNCTION	TARGET PERFORMANCE
Machinery and Equipment	Manufacturer scheduled and recommended maintenance	Maintenance, where required, and replacing assets when they are damaged or worn out.	Well-functioning equipment and machinery that meet regulated requirements and are safe and efficient to operate. Minimal failures with repair costs not exceeding machinery and equipment costs.
Land and Land Improvements	**TBD**	**TBD**	Well-functioning land assets that provide reliable, safe, and predictable access and amenities for users to be active and involved, as well as contributing to environmental protection.
Vehicles	Provincial transportation requirements Manufacturer scheduled and recommended maintenance	**TBD**	Well-functioning vehicles that meet regulated requirements and are safe and efficient.

As the Township was unable to provide an overall asset condition rating for the Township's land and land improvements and vehicle assets, the current function was unable to be determined. These items remain under consideration within the AMP document and will be updated upon completion of the broad condition assessments.

3.2 EXTERNAL TRENDS AND ISSUES

Key factors affecting the delivery of service levels for the Township's assets include:

- The levels of service of a roadway can affect the condition and longevity of other assets, including water, wastewater and storm water assets, and vice versa
- The Township's relationship with the province of Ontario who owns and operates arterial roads and transit
- Climate change, with increased risk of flooding, ultimately requiring changes to the design specifications of the Township's assets
- The potential for additional regulation(s) related to energy usage and emissions
- New accessibility standards
- New technologies
- Growth and requirement for additional/new services

4.0 ASSET MANAGEMENT STRATEGY

4.1 PLANNED ACTIONS

The Township will continue monitoring all activities relating to the various assets. Normal maintenance activities will continue to be performed and when this becomes cost prohibitive or there are concerns regarding safety or structural integrity, the best course of action, renewal/rehabilitation or replacement, will be considered. Typically a replaced asset will be disposed of either as a part of the purchase or through other disposal means. Any expansion required will be conducted in alignment with the Township's Economic Development Strategic Plan. Please refer to ***Appendix A: Asset Management Strategies*** for more information on the Township's current asset management strategies and planned actions.

4.2 PROCUREMENT METHODS

The Township updated its Procurement Policy in January 2016 to ensure best practices in the industry are used while protecting the interests of the Township and its vendors. The policy will be applied, as appropriate, for all asset and asset management related purchases.

During the project planning phase for an asset management project, the Department considers opportunities to partner with other municipalities or organizations and coordinates projects to minimize the disruption to residents and the assets.

4.3 OVERVIEW OF RISKS ASSOCIATED WITH STRATEGY

Understanding risks is important to the safety and functionality of the community as it relates to its infrastructure. Having assets perform at the expected level of service is important for the Township. If the assets have to shut down or are compromised, it becomes inconvenient for all.

Risk has been a primary driver of several programs including road inspections, bridge inspections, and culvert inspections. Assets, and customers that individual assets provide direct service to, identified as having elevated levels of risk have a lower tolerance to failure or reduced service levels. Those assets are expected to be renewed at lower thresholds of degradation and capacity. Assets are assigned a level of criticality from a number of perspectives:

a. **Environmental** – the level of impact to the environment should the asset fail. This would include proximity to environmental features such as rivers, creeks, wetlands, or other environmental features.
b. **Institutional** – the level of impact to institutional facility such as schools, seniors' homes, day care centers, etc.
c. **Health Care** – the level of impact to health care facilities such as hospitals, medical centers, dental officers, etc.
d. **Industry** – the level of impact to large industrial or commercial businesses.
e. **Transportation** – the level of impact to significant transportation corridors such as major roads or rail lines.

Although not formally documented, the risk factors are key consideration in the development of asset management activities.

4.4 OPTIONS ANALYSIS

The goal of asset management strategies is to achieve the lowest total lifecycle cost for the assets while maintaining the level of service of that asset. Achieving this goal requires defined process to evaluate the potential options and determine the best decision to make. The options for expected level of service must be compared based on:

1. **Lifecycle cost** - total cost of constructing, maintaining, renewing, and operating an infrastructure asset throughout its service life;
2. **Future costs** - must be discounted and inflation must be incorporated; and
3. **All other relevant direct/indirect costs and benefits associated with each option** - i.e. municipal wellbeing and health, amenity value, value of culturally or historically significant sites, municipal image.

The options for expected level of service have been captured in more detail in the ***Appendix A: Asset Management Strategies***. Service levels will be adjusted as necessary, consistent with the Township's expected growth level. A more comprehensive Options Analysis was not undertaken as the expected service levels have been incorporated into the current financial forecast.

5.0 FINANCING STRATEGY

A financial plan is critical to an Asset Management Plan, as it demonstrates that an effort was made to integrate Asset Management Planning with financial planning and budgeting. It is important to recognize that based upon the AMP, the funds available through the current funding streams may not be sufficient to sustain the current level of service. Staff will continue to collectively work together to accommodate the financial and technical requirements of this plan, including taking advantage of any grant funding programs that may be available today or in the future.

5.1 EXPENDITURE ANALYSIS

	YEAR	INSPECTION	MAINTENANCE	RENEWAL / REHABILIATION	REPLACEMENT	EXPANSION	NON-INFRASTRUCTURE	TOTAL
ACTUAL EXPENDITURES	2014	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	2015	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	2016	TBD	TBD	TBD	TBD	TBD	TBD	TBD
EXPENDITURE FORECASTS	2017*	49,500	136,500	1,203,800	250,000	-	-	1,639,800
	2018	31,000	138,200	537,000	659,000	363,000	2,000	1,730,200
	2019	65,500	131,000	2,199,000	1,324,000	-	-	3,719,500
	2020	34,300	134,000	307,000	330,000	-	2,000	807,300
	2021	55,500	131,000	95,600	951,000	95,000	-	1,328,100
	2022	-	135,000	1,446,000	802,000	-	2,000	2,385,000
	2023	22,000	104,500	145,000	700,000	144,000	-	1,115,500
	2024	-	107,000	368,000	180,000	-	2,000	657,000
	2025	-	117,000	175,000	601,000	-	-	893,000
	2026	-	89,500	-	540,000	-	2,000	631,500

**Note, for 2017, the expenditure forecast figures were used as the expenditure actual data was not yet available at the time of completion of the AMP.*

5.2 REVENUE ANALYSIS

	YEAR	TAXATION	GOVERNMENT TRANSFER PAYMENTS AND GRANTS	USER FEES	OTHER	TOTAL
ACTUAL	**2014**	1,928,729	827,692	36,266	61,704	**2,854,391**
	2015	2,063,242	1,215,833	74,980	184,221	**3,538,276**
	2016	2,279,335	922,682	56,993	125,294	**3,384,304**
APPROVED BUDGET	**2017***	2,548,789	917,553	66,502	11,298	**3,544,142**
REVENUE FORECASTS	**2018**	2,599,765	917,553	66,502	11,298	**3,595,118**
	2019	2,651,760	917,553	66,502	11,298	**3,647,113**
	2020	2,704,795	917,553	66,502	11,298	**3,700,148**
	2021	2,758,891	917,553	66,502	11,298	**3,754,244**
	2022	2,814,069	917,553	66,502	11,298	**3,809,422**
	2023	2,870,350	917,553	66,502	11,298	**3,865,703**
	2024	2,927,757	917,553	66,502	11,298	**3,923,110**
	2025	2,986,313	917,553	66,502	11,298	**3,981,666**
	2026	3,046,039	917,553	66,502	11,298	**4,041,392**

**Note, for 2017, the operating budget revenue figures were used as the revenue actual data was not yet available at the time of completion of the AMP.*

5.3 KEY ASSUMPTIONS

The Asset Management Plan forecasts are based on expected growth and levels of service. The starting point for the AMP was the 2017 operating budget, 2016 Road Needs Study, 2016 Bridge Management Study, 2017 Building Assessment, and the audited financial statements. The engineering study recommendations have been modified based on the Township's expenditure forecasts. Some additions have been made to cover anticipated needs beyond the time frame of the reports. Taxation revenue increases have been estimated using the same inflation rates as pertain to the costs. The Township was also unable to provide capital cost forecasts for machinery and equipment, land, and land improvement assets. These items remain under consideration and could lead to increased funding shortfalls as all forecasted revenues have been included in the financial forecast, however additional expenditures remain.

5.4 FUNDING SHORTFALLS

Even after significant borrowing assumptions, the financial forecast indicates the Township will be in a cash shortfall position of $6,718,876. Ideally, the Township will be able to secure Federal or Provincial grant funding in order to eliminate this shortfall.

APPENDIX A: ASSET MANAGEMENT STRATEGIES

ROADS

Inventory

The Township's road infrastructure system spans a total of approximately 106 kilometers within a mixed semi-urban and rural setting. The Township has approximately 69 kilometers of gravel roads, 33 kilometers of surface treated roads and 4 kilometers of hot mix asphalt paved roads.

Anticipated Asset Life Cycle

The useful life of roads ranges from 4 to 50 years. The useful life of road infrastructure is dependent on the type of surface, climate conditions, and level of service.

Integration

Roads are integrated with other buried assets located in the utility corridor such as water, sewer, storm sewers, hydro, telephone, natural gas and cable. Roads may also affect street lighting, traffic signals and sidewalks. These other integrated infrastructures have varying useful lives.

Replacement and Rehabilitation Criteria

The condition of Bonfield's roads was assessed in accordance with the Ministry of Transportation's Inventory Manual for Municipal Roads, whereby a visual assessment of each road was completed. During the field study, the following road characteristics were reviewed and documented to assess the current adequacy of the road:

- Platform width (overall width of road)
- Surface width (width of pavement surface)
- Surface condition
- Structural adequacy
- Shoulder width
- Surface type (gravel, low class bituminous, high class bituminous, or concrete)
- Drainage type (open ditches vs. storm sewers etc.)
- Roadside environment
- Alignment

Each of the roads were evaluated using the Condition Rating ("CR") methodology which allows the condition of the roads to be assessed and enables an appropriate type of improvement to eliminate the identified deficiencies. Road conditions are rated on a 100 point scale based on physical condition (surface, structural, maintenance, and drainage ratings), cross-section, alignment (rural roads only), and level of service (semi-urban and urban roads only).

Critical deficiencies are identified if the surface type, surface width, capacity, or structural adequacy fall below the minimum tolerable standards as defined in the Ministry of Transportation's Inventory Manual.

Based on the Road Needs Study conducted in 2016, a total of 21 kilometers of roads were found to be critically deficient and the estimated replacement value of the Township's 106 kilometers of road infrastructure is approximately $22.8 million.

Replacement and Maintenance Strategy

An Improvement Plan indicates the required capital improvements based on need, identified as the critically deficient roads requiring improvement in 1-5 years, 6-10 years, surface upgrades or widening, and in descending priority based on traffic volumes and CR.

Life Cycle Consequences

Underfunding of road rehabilitation results in roads being deficient which escalates construction costs. If road conditions and maintenance is not adequate, the level of service of the roads is affected and the risks and liabilities are increased.

Integrated Asset Priorities

Paved road and unpaved road rehabilitation forecasts should be compared to underground utility and other road infrastructure forecasts. The integration of projects occurs internally and externally. In general a road rehabilitation project drives the replacement of underground water and sewer infrastructure if the infrastructure is near the end of its life cycle.

ESTIMATED COST

Total Estimated Capital Cost for Ten Years: $6,276,000

($6,037,000 in renewal/rehabilitation activities and $239,000 in expansion activities)

BRIDGES AND CULVERTS

Inventory

The Township owns and maintains a total of six (6) bridge structures and ten (10) culvert structures.

Anticipated Asset Life Cycle

Depending on construction practices and materials, bridges and culverts have varying assumed lives. The life cycle can also be affected by traffic volumes and loads, climate and salt exposure. The assumed useful life of a bridge or culvert ranges from 4 to 50 years.

The average age of the Township's bridge structures is 71.4 years and the average age of the culvert structures is 37.2 years.

Integration

Bridges and culverts may be integrated with road resurfacing or road widening projects, however they are generally not integrated with other infrastructure.

Replacement and Maintenance Criteria

Each bridge and culvert structure was given a rating using the Ministry of Transportation extent and severity method, whereby the components are proportioned (in units of m2, %, m, etc.) based on their observed conditions (i.e. excellent, good, fair, poor). For each structure, components were screened for visual signs of deterioration.

Based on the Bridge Management Study conducted in 2016, the estimated replacement value of the Township's 16 bridge and culvert structures is $7.6 million and the estimated value of all bridges and culverts if reconstructed is approximately $9.6 million.

Replacement and Maintenance Strategy

Bridge and culvert structure rehabilitation or replacement is based on the age, the bridge/culvert needs, the assumed life spans, and the functional needs.

It is recommended that the structures be re-appraised by a qualified structure engineer every two (2) years.

Life Cycle Consequences

If bridge and culvert life cycles were reduced, the level of service is lowered and safety is compromised.

Integrated Asset Priorities

Bridge and culvert rehabilitation forecasts should be compared to underground utility and road infrastructure forecasts. The integration of projects occurs internally and externally. In general, a bridge or culvert rehabilitation project is not driven by the replacement of other transportation infrastructure.

ESTIMATED COST

Total Estimated Capital Cost for Ten Years: $4,729,200

($257,800 in inspection activities, $324,400 in renewal/rehabilitation activities, $4,137,000 in replacement activities, and $10,000 in non-infrastructure activities)

BUILDINGS

Inventory

The Township has 9 facilities and buildings.

Anticipated Asset Life Cycle

Buildings have a useful life ranging from 50 to 60 years.

Integration

Individual asset components are reviewed; projects are lumped together per asset to take advantage of the "economies of scale" principle. Consideration is given to minimize the disruption of operations to a given asset over time.

Replacement and Maintenance Criteria

Each building is assessed to ascertain any immediate concerns for structural and operational safety of the building and to estimate the life and maintenance costs for major components of the building. The following items are reviewed as part of the assessment: building construction year, building area, exterior (roof, walls, and windows), interior (floors, walls, and ceilings), HVAC (heating and A/C), electrical (service and lighting), and septic system general review.

Replacement and Maintenance Strategy

The assessment of these items helps identify the action that must be taken (renewal/rehabilitation, maintenance, replacement, etc.) and the timing of the major expenditures. Assets with major expenditures required immediately should be replaced or upgraded to meet life cycle, industry, technological and safety standards.

Life Cycle Consequences

Consequences include increased deterioration of building and properties, health and safety concerns, inefficient operation, higher operating costs, accelerated depreciation of Township assets.

Integrated Asset Priorities

Replacement is based on actual condition, the point in time within its life cycle, and the availability of resources to complete the replacement with minimal disruption to the program/service delivery within the asset.

ESTIMATED COST

Total Estimated Capital Cost for Ten Years: $478,000

($115,000 in renewal/rehabilitation activities and $363,000 in expansion activities)

MACHINERY AND EQUIPMENT

Inventory

Equipment includes furniture and fixtures, generators, pumps, nozzles, hoses, air packs, specialty water rescue, safety clothing, ladders, communications, technology, extrication and fuel power for all departments. Equipment also includes all items necessary for transportation services, protection services, and recreation and culture services. Equipment may be a fixed or movable tangible capital asset used for operations.

Anticipated Asset Life Cycle

The useful life of equipment ranges from 5 to 20 years.

Integration

Individual assets are kept on a replacement schedule roughly matching the useful life ranges. They are replaced so as not to disrupt the operations.

Replacement and Maintenance Criteria

The only criterion above useful life is when the asset's productivity decreases.

Replacement and Maintenance Strategy

Review usage to warrant replacement, repair costs should not exceed normal levels for the type of equipment involved. Review lease, seasonal rental opportunities, refurbishing strategies and possibility of contracting services to third party.

Life Cycle Consequences

Consequences include disruption of the operation and potential increased maintenance costs depending on the equipment involved.

Integrated Asset Priorities

Replacement is based on actual condition, the point in time within its life cycle, and the availability of resources to complete the replacement with minimal disruption to the program/service delivery within the asset.

ESTIMATED COST

Total Estimated Capital Cost for Ten Years: TBD

**Note, capital costs for the Township's machinery and equipment were unable to be provided by the Township. This item remains under consideration within the AMP document*

LAND AND LAND IMPROVEMENTS

Inventory

The Township covers approximately 209 square kilometers, located in the Nipissing district.

Anticipated Asset Life Cycle

Land usually has an indefinite useful life that exceeds the useful lives of the buildings, roads or structures situated on the land. The cost of the acquired land is not amortized as land normally maintains its value over time.

Land improvements have a useful life ranging from 20 to 25 years.

Integration

Land and land improvements are integrated with roads, buildings, bridges and culverts, as well as water and sewers.

Replacement and Maintenance Criteria

Replacement and maintenance is based on the life cycle and visual inspections of land.

Replacement and Maintenance Strategy

Assets are reviewed annually and maintenance, rehabilitation/renewal, and expansion activities scheduled as required in the 10 year plan.

Life Cycle Consequences

Land has an indefinite life cycle. However, there is a potential increase in maintenance and rehabilitation costs depending on the improvements involved.

Integrated Asset Priorities

Land improvement rehabilitation forecasts should be compared to transportation infrastructure forecasts. The integration of projects occurs internally and externally.

ESTIMATED COST

Total Estimated Capital Cost for Ten Years: TBD

**Note, capital costs for the Township's land and land improvements were unable to be provided by the Township. This item remains under consideration within the AMP document*

VEHCILES

Inventory

The Township currently maintains vehicles and fleet. Quantity / extent to be determined.

Anticipated Asset Life Cycle

The useful life of a vehicle varies depending on the service area and vehicle type, size, and cost. The assessed range is between 5 and 20 years.

Integration

Vehicles are integrated with technical advances and financial plans, environmental regulations, operational changes, and service increases or decreases.

Replacement and Maintenance Criteria

Lifecycle cost analysis considering depreciation, fuel, repairs, insurance, downtime costs, etc. will identify optimal replacement year for vehicle classes.

Replacement and Maintenance Strategy

Review usage to warrant replacement, repair costs should not exceed normal levels for the type of vehicle involved. Review lease, seasonal rental opportunities, refurbishing strategies and possibility of contracting services to third party.

Life Cycle Consequences

As cost per kilometer increases, increased downtime requiring more spare units or work schedules to be lengthened, increasing manpower costs, resulting in a loss of production.

Integrated Asset Priorities

Replacement is based on actual condition, the point in time within its life cycle, and the availability of resources to complete the replacement with minimal disruption to the program/service delivery within the asset.

ESTIMATED COST

Total Estimated Capital Cost for Ten Years: $3,423,700

($1,223,700 in maintenance activities and $2,200,000 in replacement activities)

APPENDIX B: BONFIELD'S 10 YEAR FINANCIAL FORECAST

TOWNSHIP OF BONFIELD

CASH FLOW SUMMARY

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Revenue (including inflation)										
Taxation	2,548,789	2,599,765	2,651,760	2,704,795	2,758,891	2,814,069	2,870,350	2,927,757	2,986,313	3,046,039
Government Transfer Payments and Grants	917,553	917,553	917,553	917,553	917,553	917,553	917,553	917,553	917,553	917,553
User Fees	66,502	66,502	66,502	66,502	66,502	66,502	66,502	66,502	66,502	66,502
Other	11,298	11,298	11,298	11,298	11,298	11,298	11,298	11,298	11,298	11,298
	3,544,142	**3,595,118**	**3,647,113**	**3,700,148**	**3,754,244**	**3,809,422**	**3,865,703**	**3,923,110**	**3,981,666**	**4,041,392**
Other Funding Sources										
Cash on Hand	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Debt Financing	-	2,299,650	772,358	592,243	976,624	285,946	-	-	-	-
Annual Debt Principal Payments	(101,106)	(239,273)	(281,255)	(313,447)	(366,531)	(362,756)	(342,768)	(314,786)	(314,786)	(314,786)
Annual Interest Payments	(34,547)	(111,983)	(133,289)	(147,375)	(174,306)	(176,091)	(167,805)	(161,646)	(155,920)	(149,980)
	(134,153)	**1,949,894**	**359,314**	**132,921**	**437,287**	**(251,401)**	**(509,073)**	**(474,932)**	**(469,206)**	**(463,266)**
Capital Costs (no inflation)										
Roads	864,000	483,000	2,176,000	302,000	173,000	1,446,000	289,000	368,000	175,000	-
Bridges and Culverts	351,300	692,000	1,089,500	371,300	874,100	774,000	22,000	2,000	551,000	2,000
Facilities and Buildings	38,000	417,000	23,000	-	-	-	-	-	-	-
Machinery and Equipment	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**
Land	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**
Land Improvements	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**
Vehicles / Fleet	386,500	138,200	431,000	134,000	281,000	165,000	804,500	287,000	167,000	629,500
	1,639,800	**1,730,200**	**3,719,500**	**807,300**	**1,328,100**	**2,385,000**	**1,115,500**	**657,000**	**893,000**	**631,500**

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Inflated Capital Cost	**1,672,596**	**1,800,100**	**3,947,163**	**873,847**	**1,466,330**	**2,685,897**	**1,281,359**	**769,780**	**1,067,218**	**769,795**
Operating Costs (no inflation)										
Roads	253,900	253,900	253,900	253,900	253,900	253,900	253,900	253,900	253,900	253,900
Bridges and Culverts	28,300	28,300	28,300	28,300	28,300	28,300	28,300	28,300	28,300	28,300
Facilities and Buildings	31,585	31,585	31,585	31,585	31,585	31,585	31,585	31,585	31,585	31,585
Machinery and Equipment	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Land	-	-	-	-	-	-	-	-	-	-
Land Improvements	13,776	13,776	13,776	13,776	13,776	13,776	13,776	13,776	13,776	13,776
Vehicles / Fleet	170,700	170,700	170,700	170,700	170,700	170,700	170,700	170,700	170,700	170,700
Non-Infrastructure Assets	-	-	-	-	-	-	-	-	-	-
	499,761	**499,761**	**499,761**	**499,761**	**499,761**	**499,761**	**499,761**	**499,761**	**499,761**	**499,761**
Inflated Operating Cost	**509,756**	**519,951**	**530,350**	**540,957**	**551,777**	**562,812**	**574,068**	**585,550**	**597,261**	**609,206**
Allocated Overhead	**2,324,255**	**2,324,255**	**2,324,255**	**2,324,255**	**2,324,255**	**2,324,255**	**2,324,255**	**2,324,255**	**2,324,255**	**2,324,255**
Total Operating Costs (with inflation)	**2,834,011**	**2,844,206**	**2,854,605**	**2,865,212**	**2,876,031**	**2,887,067**	**2,898,323**	**2,909,804**	**2,921,515**	**2,933,460**
Cash Surplus (Deficit)	**(1,096,618)**	**900,706**	**(2,795,341)**	**94,010**	**(150,830)**	**(2,014,943)**	**(823,051)**	**(231,406)**	**(476,273)**	**(125,130)**
TOTAL DEFICIT	**(6,718,876)**									

**Note, the Cash Flow Summary does not include capital costs for the Township's machinery and equipment, land, and land improvement assets as these costs were unable to be provided by the Township. These items remain under consideration within the AMP document.*