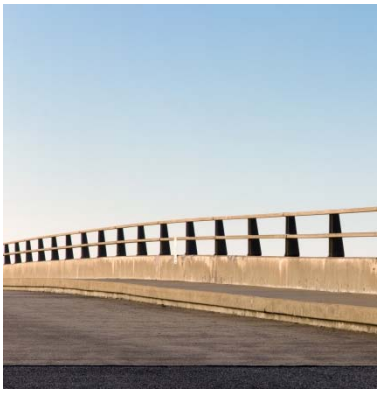
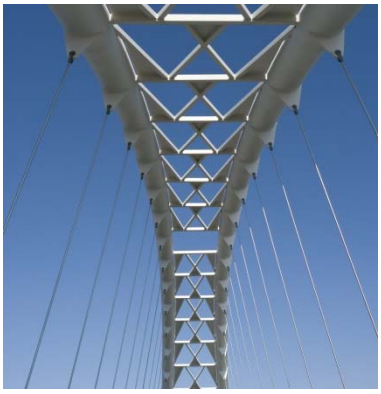
ASSET MANAGEMENT PLAN Rev 2

Township of Armour
Project # 20-1647

December 2020



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LIST OF ATTACHMENTS

REVISION #	DATE	NOTES
1.0	February 2017	Updated asset listing. Updated asset condition. Updated financing strategy.
2.0	December 2020	2020 update of asset inventory and financing strategy.

1 EXECUTIVE SUMMARY

The Township of Armour has undertaken the development of an Asset Management Plan in response to the Ontario Government's provincial capital funding requirements. The purpose of this Comprehensive Asset Management Plan is to assist with prioritizing investments into municipal assets to ensure that infrastructure funding, whether generated through local or senior levels of government, be applied to projects with a greater priority. This Asset Management Plan has been structured to adhere to the requirements outlined in Ontario Regulation 558/17- Asset Management Planning for Municipal Infrastructure. Under this Regulation every Municipality is required to have a plan in place for its Core Assets by July 1, 2021, and all other municipal infrastructure assets by July 1, 2023.

As the following Asset Management Plan will outline, the Municipality's existing infrastructure is aging and deteriorating while demand grows for better infrastructure facilities. This demand is in response to higher standards of safety, accessibility, health, environmental protection, and regulations. The solution to this issue is to examine the way the Municipality plans, designs and manages infrastructure to meet changing demands. This Asset Management Plan is expected to assist:

- Council in making service level and investment decisions,
- Staff with the planning and management of the assets, and
- Taxpayers by sustaining value for the services provided.

As presented in this Asset Management Plan, the total replacement cost of the Municipality's assets was calculated to be approximately $63 million dollars (2020 Dollars), for roads, structure, building, vehicle and equipment& recreation asset categories. The Municipality is not required to budget for the full replacement value of all these assets simultaneously, as portions of assets only require an initial investment followed by further re-investment to maintain acceptable levels of service.

With that in mind, it was calculated that the annual reinvestment over the next 10 years should be an average of $ 1.5 million into municipally owned assets as they reach their maximum potential useful lives, in order to sustain assets at an appropriate level of service in a way that manages associated risk. The actual investment value will vary from year to year depending on the scope and size of the planned capital works. Projects will need to be re-prioritized from year to year based on the availability of funding.

This plan addresses the replacement and planned expansion priorities of the Municipality, however it is imperative that current maintenance activities be continued and expanded as recommended. The ability for the Municipality to leverage its knowledge of infrastructure and by applying the best Asset

Management practices at the time will result in very positive improvements in infrastructure. A brief summary of the sections contained within this report is presented as follows.

Section Two of the Municipality's Asset Management Plan provides an introduction to the assets included in the plan as well as how the plan was developed and the goals of the Asset Management Plan.

The Third section will summarize the asset types and quantities as well as their characteristics, condition and replacement values which were quantified by the Municipality's current asset inventory and for some assets, supplemented with visual inspections.

Section Four will outline the expected levels of service for each asset, and provides an indication of the minimum acceptable standards for an asset. Service levels were developed through consideration of industry standards, generally accepted levels of operation and safety, as well as evaluating the risk associated with achieving the targets levels established.

The asset management strategy for each asset type is presented in Section Five. The strategy and scheduling of asset renewal activities has been laid out by establishing planned actions through options analysis and risk assessment to maximize lifespan and minimize cost in a sustainable way.

The final section of the plan consists of the financial plan required to support the asset management strategy by summarizing the cost per year, per asset group to ensure sustainability. Comparisons are made to past expenditures and funding sources to identify the funding gaps in the proposed plan.

This comprehensive Asset Management Plan is a 2020 update to the plan originally developed in 2014, and previously updated in 2016. This document is furthermore expected to be a living document that is updated regularly as priority's shift or as work is completed. In addition, improvements to the methodologies of data collection for developing more accurate inventory information and evaluation will only serve to bolster the content of the plan. An Asset Management Plan that is not updated will quickly become obsolete and be of absolutely no benefit to the Municipality.

It is imperative that this Asset Management Plan be reviewed in conjunction with the working Asset Inventory Spreadsheet.

The strategy developed within the Asset Management Plan can be summarized with the following conclusions:

- The annual reinvestment should be an average of $ 1.5 million per year over the next ten years in order to sustain existing services at an appropriate level of service. Between 2017 and 2019 the Township has spent an annual average of $ 1.15 million on capital assets, indicating that upcoming investment needs fall short of historical funding,
- For the Road Asset category this plan has projected an annual shortfall between required and available funds for 8 of the 10 years ranging between $129 000 and $835 000,
- The needs for the Structures Asset category are assumed to be funded as needed through use or reserve funds,
- The expected needs over the next ten years for Building, Vehicle and Equipment and Recreation asset categories are met through a combination of annual municipal funds and reserves,
- The total projected annual funding gap over the next 10 years ranges from $0 for 2020 and 2021, up to a maximum shortfall of $835 000 in 2023. The presentation of this shortfall outlines the goal for additional funding over the short term in order to meet a needs/financing balance within the projected 10 year period, and,
- Suggested ways of meeting the funding shortfall identified within the Roads and Structures asset categories are listed within the report, however whether they are implemented or not is a decision to be made by Council.

2 INTRODUCTION

This Asset Management Plan (AMP) was prepared by Tulloch Engineering Inc. (Tulloch) in cooperation with the Township of Armour (Municipality) to meet the requirements of Ontario Regulation 558/17- Asset Management Planning for Municipal Infrastructure. This plan is an update of the original AMP developed in December 2013, which was updated in 2016 and expanded to include additional assets held by the Township.

The intention of the AMP is to provide answers and guidelines to the following questions.

1) What do you have and where is it?
2) What is it worth? (Current and Estimated Replacement Costs)
3) What is its condition and expected remaining service life?
4) What is the level of service expectation?
5) When do you need to do it?
6) How do you ensure long-term affordability?

Asset management planning is meant to aid municipalities in making cost effective decisions with regards to operating, maintaining, renewing, replacing and disposing of their infrastructure assets. The decisions and directions laid out in the asset management planning process are intended to ensure that the Municipality will be capable of providing the levels of service needed to meet their desired plans, goals and objectives.

The assets considered within this AMP are the following municipal assets;

- Roads;
- Bridges;
- Buildings;
- Vehicles; and
- Equipment and Recreation.

Each municipal asset was divided into its respective category based on type and was assessed for current condition, financial accounting valuation and replacement cost valuation. The condition of each of the assets was assessed using sound and accepted methods – which are outlined in the following sections of the report.

This AMP has been developed to cover a ten (10) year window but is intended to be updated on a regular basis as operating conditions and municipal goals change. A key aspect of this plan is the ongoing evaluation of asset performance and value that will be required in future years. The development of this plan involved continued communication between Tulloch and Municipal Staff. The

policies and strategies presented are based upon discussions with Municipal representatives and accepted practices for the management of infrastructure assets.

This Asset Management Plan is a tool to help ensure that measures are taken to maintain an acceptable performance level for years to come. The quality and condition of infrastructure assets are of great importance as they help to support economic activity and improve general quality of life. This plan is not intended to change the Municipality's existing processes and procedures with regards to their infrastructure assets but rather improve the decision making process by using long range vision to dictate resource allocation and use performance based analyses to determine if desired goals and objectives are being met.

The Municipality's Capital Asset Summary information, presents the inventory, current and projected condition ratings, as well as known or projected replacement/rehabilitation costs on a per asset type basis in a digital format.

3 STATE OF LOCAL INFRASTRUCTURE

This section of the report outlines the quantity and quality of assets owned and managed by the Municipality. In addition, the current age, condition, financial valuation and replacement cost valuation of the assets included is presented.

The two following figures provide a comparison of the Municipality's capital assets based on 2013 Public Sector Accounting Board (PSAB) values and 2020 replacement values. The PSAB values are based on currently accepted historic costs and depreciation values, which were extracted from the current Municipal PSAB records. The 2020 replacement values were generated based on the assets physical characteristics and benchmark costs established from recent construction projects. The benchmark costs per asset type are presented in the corresponding Asset Inventory Spreadsheets.

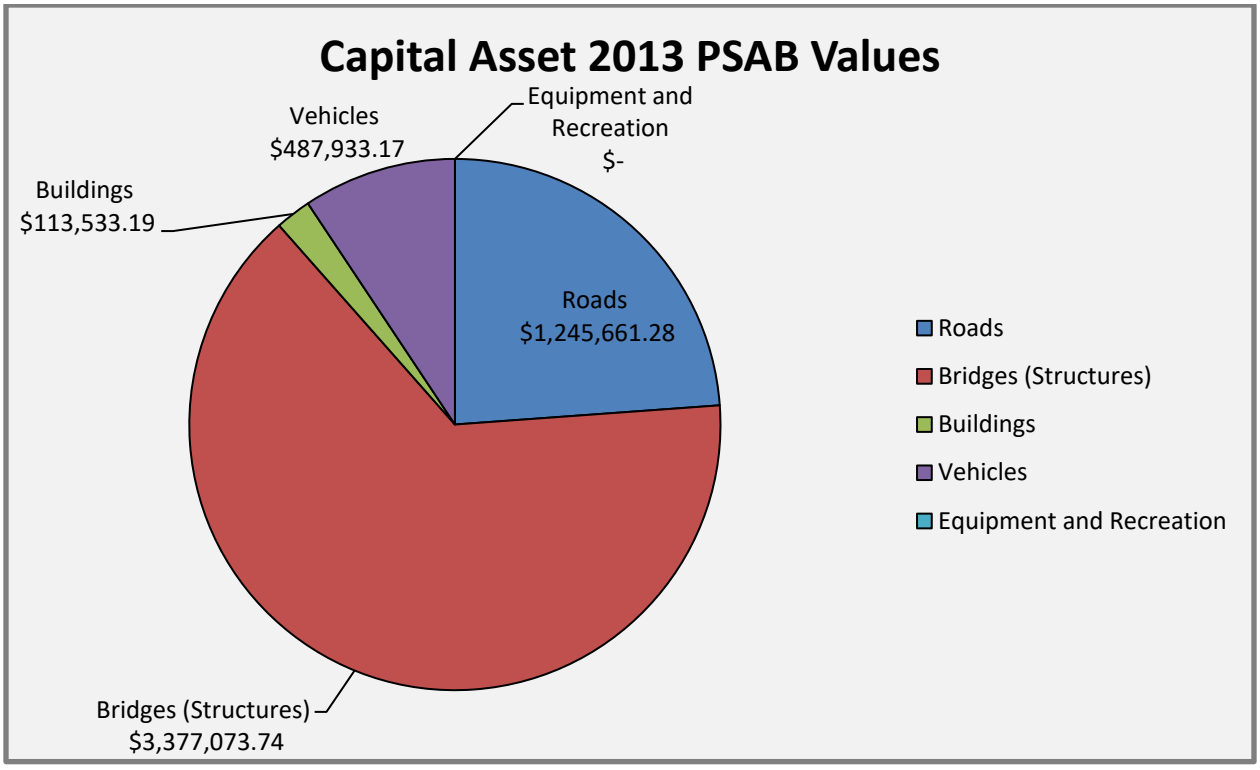

Figure 1- Capital Asset PSAB 2013 Values ($5.2 M)

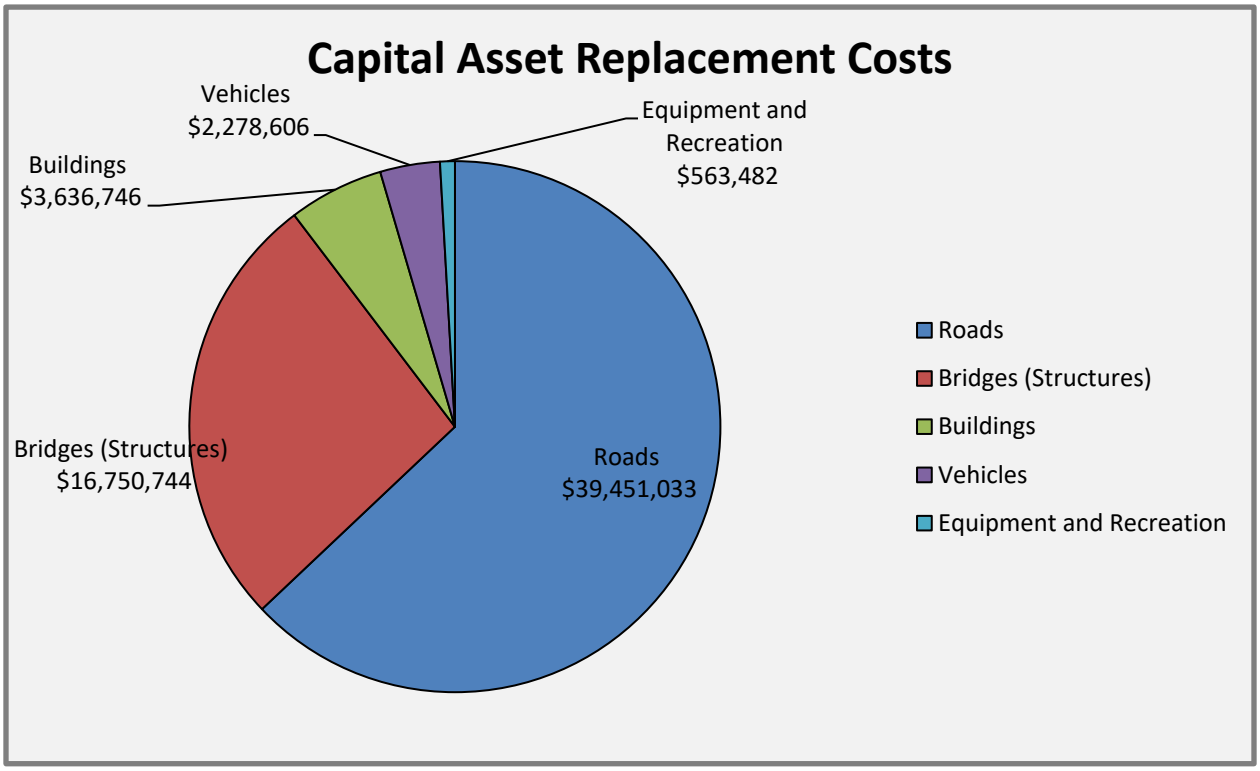

Figure 2- 2020 Asset Replacement Costs ($ 63 M)

The following sections provide a breakdown of the asset inventory based on the major asset categories. The method of evaluation and projected condition are also outlined. Finally, a data verification policy and condition assessment policy is recommended to outline when and how the asset inventory, state of infrastructure, and level of service is updated.

3.1 ROADS

The Municipality's road network consists of approximately 131 km of roads (262 lane km), the majority of which are year-round maintained roads. The roadway inventory and condition ratings were based on the review of the road network by the Municipal Public Works group. A full Road Needs Study was most recently completed by D.M. Wills Associates Limited in May 2016. The roadways within the Township can be broken down into three main categories by surface type including gravel surface or loose top, low class bituminous (L.C.B.) or surface treated roads, and high class bituminous (H.C.B.) or asphalt roads.

Some of the road assets extend along the boundary of the neighbouring municipality. These shared assets are indicated as such within the Asset Inventory Spreadsheets and only half of the total road

width is entered for these assets so the corresponding calculations represent only the Township of Armour's financial obligations to the projects.

3.1.1 Method of Condition Evaluation

Appraisal of the Municipality's local road system was completed by the Public Works group in 2020 and was conducted in accordance with procedures outlined in the MTO Methods and Inventory Manual for Municipal Roads (1991), and Manual for Condition Rating of Flexible Pavements (1989). The system was divided into 112 road sections (intersection to intersection, or change in surface type), consistent with the breakdown provided in the original 2013 AMP. Each road section was identified and assigned a number, and then its location, length, geometrics, roadside environment, and surface type were noted. Traffic volumes were also estimated. The condition of each road section was assessed and improvement needs and associated costs were then identified.

Each road section was assigned a condition rating between 0 and 100 based on the 2020 condition assessment completed by the Public Works group. This rating was then divided by 10 to maintain a rating system with previous plan evaluations. The rating was based on current surface condition, surface type and drainage conditions. The following is a measure of the condition of the existing road system as outlined in the Methods and Inventory Manual:

Condition Rating	System Condition
8 to 10	good structural condition; some local improvement may be needed
4.5 to 7	average structural condition; continued improvement needed
Less than 4.6	poor structural condition; substantial improvement needed throughout total road segment

The Condition Rating of the road system is considered to be a major factor in the Level of Service provided by the Township, and the target rating is discussed below in Section 4.

The method of evaluating road surface deterioration relies on estimating the life cycle of various road surfaces. The expected useful life of each type of road is considered to be the number of years required for the condition rating to decrease from 10 to 5. For the purpose of this AMP, the life cycle for gravel

roads was assumed as six years, although severe spring breakup may affect the condition rating. Surface treated roads (L.C.B.) typically have a seven year life cycle and asphalt roads (H.C.B.) have a twenty year life cycle. Based on these service lives the rate at which the condition of each road surface deteriorates can be calculated and for the purposes of this study, the following assumptions were made for road deterioration rates:

- Gravel/Loose Top Roads → Condition rating reduced by 0.8 per year
- Low Class Bituminous Roads → Condition rating reduced by 0.7 per year
- High Class Bituminous Roads → Condition rating reduced by 0.25 per year

While these life cycles are a fair approximation of useful life, it should be noted that true condition of the roadways may be dependent on their use, the structural condition of the road and timeliness of routine maintenance.

This system involves projecting asset deterioration by road surface only and negates the rating or lifespan of other road features including the road base, centerline culverts or barriers. These features generally have a lifespan exceeding that of the road surface and, while they are inventoried and tracked within the Asset Inventory Spreadsheet, they do not automatically trigger a reduction in rating. Required works on these features shall be entered manually as recommended within the Road Needs Studies.

3.1.2 Inventory

A complete listing, with detailed information, of the Township's 112 distinct road assets can be found in the Asset Inventory Spreadsheet. The following table summarizes the current state of the road assets as assessed within the 2020 Roads Needs Study broken down by surface type and Average Annual Daily Traffic Counts (AADT).

Table 1- Road Infrastructure Condition Rating (2020)

SURFACE	AADT	LENGTH (km)	2020 Average Condition Rating	NUMBER OF ASSETS AT 5 OR BELOW
GRAVEL	**0-399**	**72.94**	**7.63**	**0**
	0-49	24.50	7.47	-
	50-199	44.49	7.83	-
	200-399	3.95	7.65	-
L.C.B.	**0-999**	**46.40**	**8.02**	**1**
	0-49	0.71	8.20	-
	50-199	15.52	8.01	-
	200-399	25.66	7.86	1
	400-999	4.51	8.53	-

H.C.B.	**0-1000+**	**11.38**	**7.73**	**0**
	0-49	1.56	7.54	-
	50-199	0.22	8.25	-
	200-399	9.33	7.82	-
	1000+	0.27	7.2	-
	Grand Total	**130.72**	**7.85**	**1**

3.1.3 Policies

It is recommended that an annual cycle be established to update condition ratings and cost projections in accordance with the procedures outlined in the MTO Methods and Inventory Manual.

In order to track perceived condition of the road assets by the users (Township residents), it may be helpful for the Township to implement a system to track and tally user complaints received for each section of road.

Following the completion of road work projects each year, the Township should update the improvement dates and condition ratings within the Asset Inventory Spreadsheet to maintain an up to date listing and projection of road conditions.

To improve the inventory of the road assets, it is recommended that the components associated with each road, including culverts and barriers, be assessed and included in the Asset Inventory Spreadsheet. This will allow for a more accurate projection of both lifespan and cost for the road assets.

3.2 STRUCTURES

This asset category will include bridges and structural culverts. A structural culvert is defined within the Ontario Structure Inspection Manual (OSIM) as a culvert with a span of 3 meters or more. The structure inventory and condition ratings are based on the Ontario Structure Inspection Manual (OSIM) inspections completed by Tulloch Engineering Ltd. in the summer of 2020.

Some of the structure assets are shared between the Township of Armour and the neighbouring municipality. These shared assets are indicated as such within the Asset Inventory Spreadsheets and only half of the asset costs are assigned to the Township.

3.2.1 Method of Condition Evaluation

Appraisal of the Municipality's Structures was carried out in the summer of 2020 in accordance with procedures outlined in the Ontario Structure Inspection Manual. Where detailed information on the

structure components was available the asset inventory includes the quantity, dimensions and condition of these components divided into primary structural groupings. These groupings include Decks, Joints, Sidewalks/Curbs, Barriers, Beams, Trusses/Arches/Bracing, Coatings, Abutments, Piers, Retaining Walls, Foundations, Signs and Approaches. For the purposes of asset forecasting, the overall expected useful lifespan of the structure is set at 75 years, while each known structure component also has a specific expected useful lifespan assigned.

Each structure, and known structure component, has been given a subjective rating of Excellent, Good, Fair or Poor, based on OSIM assessment. The condition rating of the structure and its components is reduced based on age as follows:

Rating	Age
Excellent	Less than 5 years old
Good	Between 5 years old and 50% of its life expectancy
Fair	Between 50% and 75% of its life expectancy
Poor	Between 75% and 100% of its life expectancy
Replace	Beyond its life expectancy

The overall condition of the structure is assigned the ranking of the lowest ranked structure component. Where improvements are required, as identified within the OSIM report, or within the condition forecast, an improvement cost and year are assigned. The threshold for acceptable condition ratings is evaluated in the context of the Level of Service provided by the structure and is discussed in Section 4. The depreciating condition rating is an approximation for forecasting purposes only. Decision making regarding structure condition should be based on regularly updated OSIM assessments.

Each structure is also assigned a replacement cost. The replacement cost does not necessarily represent replacement with the exact same asset, but instead represents the cost of replacing that asset based on modern levels of service. Therefore, the replacement cost calculated for this plan assumes replacement of the existing asset with a structure sized to accommodate two lanes and is based on historic project costs as published by the Ontario Ministry of Transportation (MTO). Where a structure was replaced within the last 10 years, the replacement cost at that time has been projected forward based on a 2.6% inflation rate. Otherwise, the costs of bridge replacement was estimated based on the total span in three groupings as follows:

Table 2- Bridge Replacement Rates

Span (m)	Replacement Cost per m Length
10-20	$93 000
21-40	$82 500
41-60	$60 000

Where replacement of an entire structure is entered this total replacement cost will override any Known Improvement Costs listed for each of the existing structure's components.

3.2.2 Inventory

The Township's current structure inventory consists of 10 bridges. The complete inventory of structures, complete with structure components, is presented in the Asset Inventory Spreadsheet.

Table 3- Structure Condition and Replacement Costs (2020 Dollars)

Asset Name	Overall Condition (2020 OSIM)	Lowest Component Condition (Component) (2020 OSIM)	2020 Replacement Cost
Ferguson Road Bridge	GOOD	POOR (Seals/Sealants)	$ 2,262,000.00
Doe Lake Road Bridge	EXC	EXC	$ 2,999,000.00
Thompson Bridge	POOR	POOR (Seals/Sealants, Signs)	$ 1,055,000.00
Pickerel & Jack Lake Road Bridge	EXC	EXC	$ 1,156,000.00
Proudfoot Bridge	GOOD	GOOD	$ 1,553,000.00
North Pickerel Lake Road Bridge	POOR	POOR (Barrier/Parapet Walls)	$ 960,000.00
Legget's Bridge	FAIR	FAIR (Signs)	$ 3,000,000.00
South Horn Lake Road Bridge	POOR	POOR (Ballast Walls)	$ 1,715,000.00
Armour-Strong Boundary Bridge	FAIR	FAIR (Foundations, Signs, Wearing Surface, Barrier)	$ 2,263,000.00
East Road Bridge	POOR	POOR (Deck Top, Curbs, Girders, Barrier)	$ 1,693,000.00
Grand Total			**$ 18,656,000.00**

In the previous version of the AMP development the Township indicated that the East Road Bridge will not be replaced and will be permanently closed once it is deemed unsafe.

3.2.3 Policies

As the OSIM Inspection frequency is currently legislated as once every two calendar years, it is recommended that the legislated frequency, as may be amended, be followed. In addition, it is

recommended that the inspections be completed with the currently utilized OSIM Inspection Forms to permit equal comparison of subsequent inspection reports.

3.3 BUILDINGS

The Township owns 16 building assets. This asset category includes municipal offices, community centers, recreation buildings and landfill buildings. Due to the range in use of these buildings, the asset ID's in this category include the following:

Code	Category
BLD	General Building
REC	Recreation Building
BLD-LF	Landfill Building

The Municipality's building conditions were originally established based on the condition from the 2016 AMP update. No new building assessments have been completed as part of this updated.

3.3.1 Method of Condition Evaluation

Each of the buildings were assigned an identification number and, where available, floor space and year of construction were noted. In addition, where information was available, various components of each building were inventoried so declining condition could be tracked independently based on that specific component's estimated useful life.

Each building and building component asset has been given a subjective rating of Excellent, Good, Fair or Poor, based on current overall condition of the asset. For the purposes of forecasting all building assets were estimated to have an overall lifespan of 75 years. Individual building components were subject to varying lifespans.

The declining condition rating for the entire building as well as the individual components is calculated based on age and expected useful life as follows:

Rating	Age
Excellent	Less than 5 years old
Good	Between 5 years old and 50% of its life expectancy
Fair	Between 50% and 75% of its life expectancy
Poor	Between 75% and 100% of its life expectancy
Replace	Beyond its life expectancy

In some cases information regarding specific buildings components was not available, and a replacement cost for the full asset was assigned. In these cases, the declining condition of the building is based solely on the building age. In other cases, building component information is detailed enough to predict the full replacement cost of the building based on component unit rates. In these cases the declining condition of the building is reported as the lowest condition rating of any one building component. In all cases, replacement dates and costs of individual components can be included in the asset needs forecast.

The depreciating condition rating is an approximation for forecasting purposes only. Decision making regarding structure condition should be based on regularly updated building assessments.

The threshold level for condition rating relates to the Level of Service to be provided by the Township and is discussed further in Section 4.

3.3.2 Inventory

A summary of the Township's Building Inventory including total replacement cost and current condition is provided in the below table. The complete inventory with all component detail is presented in the Asset Inventory Spreadsheet.

Table 4- Building Condition and Replacement Costs (2020 Dollars)

Asset ID	Asset Name	2020 Condition Rating	2020 Replacement Cost
ARM - BLD - 001	Sand Storage Shed	GOOD	$ 321,953.57
ARM - BLD - 002	Municipal Garage	FAIR - GOOD	$ 817,318.80
ARM - BLD - 003	Berriedale Community Centre	POOR	$ 192,472.24
ARM - BLD - 004	Armour Office- 56 Ontario Street	GOOD	$ 816,548.91
ARM - BLD - 005	Information Centre	FAIR	$ 46,659.94
ARM-BLD-LF-001	Landfill Recycling Building	GOOD	$ 258,962.66
ARM-BLD-LF-002	Landfill Recycling Bunker	GOOD	$ 59,491.42
ARM-BLD-LF-003	Landfill Re-use Pavilion	GOOD	$ 54,825.43
ARM-BLD-LF-004	Landfill Storage Container	GOOD	$ 5,832.49
ARM - REC - 001	Doe Lake Beach Washroom	GOOD	$ 81,654.89
ARM - REC - 003	Katrine Community Center	GOOD	$ 571,584.24
ARM - REC - 005	Katrine Canteen/Washrooms	GOOD	$ 86,320.89
ARM-REC-006	Katrine Outdoor Pavilion	GOOD	$ 61,824.42
ARM-REC-007	Doe Lake Park Pavilion #1	GOOD	$ 18,663.98
ARM-REC-008	Doe Lake Park Pavilion #2	GOOD	$ 37,327.95
ARM-REC-009	Watt Century Heritage Centre	POOR*	$ 205,303.73
		Grand Total	**$ 3,636,745.55**

3.3.3 Policies

It is recommended that annual reviews be completed to update condition ratings, maintenance needs and cost projections in accordance with the current inventory forms, as well as to recommend further investigations where warranted. Problematic buildings or those over 50 years in age should be reviewed on a more frequent basis.

The asset inventory should be updated to include as much building component information as possible so maintenance and improvement needs can be better tracked and projected.

Achievement of the levels of service for the buildings can easily be determined by reviewing the performance of the existing infrastructure, i.e. is the building serving its intended purpose without restrictions? The municipality does not currently keep records of the number building service interruptions (leaking roof, broken HVAC systems etc.), however a policy should be implemented as part of the new asset management strategy. Confirming achievement of this level of service will require the Municipality to keep records and review them on an annual basis as a minimum.

3.4 VEHICLES

The Township's vehicle inventory includes light duty and heavy duty vehicles, equipment and machinery. All of these assets are assigned to the Township's Public Works department.

3.4.1 Method of Condition Evaluation

The Municipality's fleet vehicles, machinery, and equipment assets were evaluated based on the inventory and information provided by the Municipality within their existing records. Each of the assets was assigned an identification number and both acquisition year and replacement cost was noted.

Each asset has been given a subjective rating of Excellent, Good, Fair or Poor, based on the opinion of the Public Works Manager. Assets were subject to varying lifespans ranging from 10 to 30 years. The condition rating of each asset was projected to decline based on age and expected useful lifespan as follows:

Rating	Age
Excellent	Less than 5 years old
Good	Between 5 years old and 50% of its life expectancy
Fair	Between 50% and 75% of its life expectancy
Poor	Between 75% and 100% of its life expectancy
Replace	Beyond its life expectancy

The threshold level for acceptable condition rating relates to the Level of Service to be provided by the Township and is discussed further in Section 4.

3.4.2 Inventory

The Township has a total of 13 vehicle assets of which 3 are classified as light duty and 10 are classified as heavy duty. A summary of the asset listing including 2020 condition rating and replacement costs are outlined in the following table.

Table 5- Vehicle Condition and Replacement Costs (2020 Dollars)

Asset ID	Asset Name	2020 Condition Rating	2020 Replacement Cost
ARM - VEH - 002	Ford SRW Pickup	POOR	$ 45,000.36
ARM - VEH - 003	2011 Freightliner	GOOD	$ 220,590.00
ARM - VEH - 004	2016 Western Star	GOOD	$ 220,590.00
ARM - VEH - 005	2007 Sterling Model STE	POOR	$ 220,590.00
ARM - VEH - 006	2019 Freightliner (Dump Truck)	EXCELLENT	$ 320,000.00
ARM - VEH - 007	2013 Strongco G940B Grader	GOOD	$ 296,513.90
ARM - VEH - 008	Case Loader / Hoe	GOOD	$ 123,120.00
ARM - VEH - 009	Liebherr Litronic Rubber Tire Excavator	FAIR	$ 318,060.00
ARM - VEH - 010	John Deer Loader	POOR	$ 201,096.01
ARM - VEH - 011	Case Sweeper	POOR	$ 201,096.01
ARM - VEH - 012	Thompson Culvert Steamer	FAIR	$ 41,040.00
ARM - VEH - 013	Dodge Ram 4x4 Pick Up	EXCELLENT	$ 35,910.00
ARM - VEH - 015	2015 Load Star Float Trailer	EXCELLENT	$ 35,000.00
		Grand Total	**$2,278,606**

3.4.3 Policies

For each of the assets, it is recommended that an annual cycle be established to update condition ratings, mileage, hours and cost projections in accordance with MTO vehicular safety standards.

Furthermore, in order to track level of service goals, frequency of use and number of breakdowns should also be noted throughout the year.

3.5 EQUIPMENT AND RECREATION INVENTORY

The Township's Equipment and Recreation Asset inventory includes office equipment such as photocopiers and software, as well as recreation equipment such as play structures. Due to the range of use of assets within this category, the asset ID's within this category include the codes "EQP" for general equipment and "REC" for recreational equipment.

3.5.1 Method of Condition Evaluation

The Municipality's Equipment and Recreational items were evaluated based on the inventory and information provided by the Municipality within their existing records. Each of the assets was assigned an identification number and both acquisition year and replacement cost was noted.

Assets were subject to varying lifespans ranging from 5 to 20 years. The condition rating of each asset was projected to decline based on age and expected useful lifespan as follows:

Rating	Age
Excellent	Less than 5 years old
Good	Between 5 years old and 50% of its life expectancy
Fair	Between 50% and 75% of its life expectancy
Poor	Between 75% and 100% of its life expectancy
Replace	Beyond its life expectancy

The threshold level for acceptable condition rating relates to the Level of Service to be provided by the Township and is discussed further in Section 4.

3.5.2 Inventory

The Township has a total of 7 assets within this category of Equipment and Recreation, 5 of which are classified as office equipment while the remaining 2 are classified as recreation equipment. A summary of the asset listings including the acquisition year, 2020 condition and replacement costs are outlined in the following table.

Table 6- Equipment and Recreation Condition and Replacement Cost (2020 Dollars)

Asset ID	Asset Name	2020 Condition Rating	2020 Replacement Cost
ARM-EQP-001	Cannon- C5035 Photocopier	GOOD	$13,321
ARM-EQP-002	Cannon- IR 3000 Photocopier	FAIR	NA
ARM-EQP-005	Computer server	EXC	$7,617
ARM-EQP-006	Website	EXC	$6,576
ARM-REC-002	Doe Lake Playbooster/superscoop structure	GOOD	$117,468
ARM-REC-004	33 folding tables with 160 chairs	GOOD	$13,763
ARM-EQP-007	Cannon- C8055 Photocopier	EXCELLENT	$6,788
ARM-EQP-008	Stationary Compactor	EXCELLENT	$179,524
ARM-EQP-009	Postage Machine	EXCELLENT	$5,984
ARM-EQP-010	Pick-up Sander	EXCELLENT	$7,779
ARM-EQP-011	Heavy Equipment Trailer	EXCELLENT	$23,936
ARM-EQP-012	Boat Launch	EXCELLENT	$161,571
ARM-EQP-013	Roadside Mower	EXCELLENT	$ 19,149
		Grand Total	**$ 563,481**

A replacement cost listed as NA indicates that the Township has no intention of replacing the asset once it has exceeded its useful service life.

3.5.3 Policies

For each of the assets within this category the Township should annually rate the condition and frequency of use.

4 LEVELS OF SERVICE AND RISK ASSESSMENT

Levels of Service are statements of performance criteria which provide an indication of the minimum acceptable standard for an asset.

To optimize an Asset Management Plan and ensure target levels of service are appropriate, performance measures or indicators are established and should be reviewed on a regular basis. Performance measurement of the assets will provide an indication as to whether the rehabilitation and replacement strategies are effective or whether changes need to be made. Performance benchmarks for the various asset groups are described in the following sections.

Desired levels of service within the Municipality were developed in consultation with the Municipal staff and through consideration of a number of documents and industry recognized standards to meet generally accepted levels of operation and safety. The target levels of service should be reviewed on a regular basis to determine if they are appropriate, and achievable.

This section also includes Risk Assessment, which outlines the limitations for modifying the levels of service based on the level of risk associated with falling below the target. All assets carry a level of risk for their users. Generally when conducting a risk assessment, two key factors that come into consideration are frequency of use and cost of improvement. Acceptable levels of risk may vary depending on the frequency of use. For example, if a rarely used asset and a frequently used asset do not meet today's minimum standards, the risk is higher for the frequently used asset and therefore, rehabilitation of this asset should be prioritized ahead of a rarely used substandard asset.

It is desirable to limit risk by replacing/improving the condition of all assets to meet today's minimum standards; however, the cost of doing so is not always feasible. The Municipality attempts to achieve a manageable level of risk by completion of condition reviews and prioritization of replacement/improvement projects.

The level of service goals have been incorporated into the Asset Inventory Spreadsheet during the development of the Asset Management Scenarios and adjustments to the plan have been made as necessary either by increasing the annual budget for that specific asset group or by revising the target level of service within the guidance of the Risk Assessment.

4.1 ROADS

Target Level of Service

The primary Level of Service target is associated with safety of roadways. There are multiple roadway parameters that can be linked to safety issues including poor sightlines, excessive grades or low road elevations in floodplain areas. A parameter affecting safety that has been tracked within the roads inventory is the Road Width. Sub-standard road widths can lead to safety concerns by not providing enough room for drivers to manoeuver in the face of oncoming traffic. *The desired level of service for Municipal Roadways will be to provide a minimum road width of 6.0 m.* Road assets with a width less than 6.0 m are considered to present a safety concern to road users.

A second dominant performance measurement of the road system is user experience. For this reason the Municipality has established a target level of service for roads based on the surface condition rating of each individual road segment. As outlined in Section 3.1 road segments are assigned a condition rating between 1 and 10 where 10 represents a road in excellent or new condition and a rating of 5 or less corresponds to poor condition. This method for assessing Level of Service has been selected as it is an easily tracked quantifiable parameter. Furthermore this condition rating relates directly back to the user's experience of the road assets. *The desired level of service for Municipal Roads is to maintain a condition rating of 6.0 or greater.* Road assets falling below this threshold will be more difficult to maintain and result in a higher rate of user complaints.

Risk Assessment

When developing the Asset Management Plan it may be necessary to allow road assets to fall below the identified Level of Service thresholds in order to narrow the gap between Asset Needs and Available Funds. The decision to fall short of these target level of service will be influenced by the Average Annual Daily Traffic Count for that specific road asset. A road with a higher traffic volume is more at risk with respect to both safety concerns and user complaints should the level of service be below the target. Therefore, roads with an AADT below 100 will be permitted to drop below the target levels of service if required.

Improved Level of Service

Gravel roads which reach an AADT greater than 200 should be surface treated in order to improve the overall level of surface for these higher use assets.

4.2 STRUCTURES

Level of Service

The target level of service for Municipal bridges is to maintain all bridges such that they do not require a load limit posting, and that the structure capacity is sufficiently serving the associated road traffic volume. This should be achieved by continuing to complete rehabilitation and repair recommendations outlined in the OSIM inspection within the suggested timeframes. In general, components of a bridge are recommended for rehabilitation or repair once a large percentage reaches a condition of 'Poor'. If a number of components are rated POOR, the structure is typically recommended for a major rehabilitation or replacement within a specified timeframe. *To obtain the target level of service the target condition rating will be FAIR.*

It should be noted that the results of the biennial inspections should be compared with the forecasted condition of the structure and should supersede the forecasted condition in all cases. All rehabilitations and repairs shall be completed in accordance with the current Canadian Highway Bridge Design Code.

Risk Assessment

The risk associated with not meeting the target level of service is dependent on the component. Some components inventoried under this asset group, such as curbs, approaches, or approach wearing surface, have a lower consequence of failure than other structural components of the bridge. To manage the Risk Assessment with respect to component level of service the following guidelines are provided:

- Under no case will the condition rating of any component be allowed to degrade to REPLACE,
- Under no case will the condition rating of any component be allowed to degrade to POOR for a period greater than 5 years, and,
- Under no case will the condition rating of any STRUCTURAL component be allowed to degrade to POOR for a period greater than 2 years.

Improved Level of Service

Several of the existing bridge assets only support a single lane of travel. As a means of improving the level of service offered by this asset group all bridge replacement costs (not component replacement costs) have been estimated as two lane structures.

4.3 BUILDINGS

Level of Service

The target level of service for Municipal buildings is to maintain all buildings such that they do not restrict access or intended use, and provide for a safe user environment. This should be achieved by continuing to complete upkeep and maintenance on various building components as well as completing recommended repairs identified through annual inspections.

In general, components of a building are recommended for rehabilitation or repair once a large percentage reaches a condition of 'Poor'. If a number of components are rated poor, the structure is typically recommended for a major rehabilitation or replacement. *Therefore, to achieve this level of service the target condition rating will be FAIR.*

Risk Assessment

The risk associated with not meeting the target level of service is dependent on the component. Some components inventoried under this asset group, such as finishings and air conditioning, have a lower consequence of failure than other structural components of the buildings. To manage the Risk Assessment with respect to component level of service the following guidelines are provided:

- Under no case will the condition rating of the entire asset be allowed to degrade to REPLACE,
- Under no case will the condition rating of any STRUCTURAL of EXTERIOR component be allowed to degrade to POOR for a period greater than 5 years, and,
- Building assets that will be removed from circulation and not replaced will be kept in service and allowed to degrade with no improvement investment to the point that the assets are deemed unsafe.

Improved Level of Service

Improving levels of service for building assets may include items such as expanding building capacity or functions. Improved levels of service in terms of replacement buildings have not been accounted for within this plan. The Township is encouraged to consider their future needs with respect to buildings, so appropriate replacement costs can be built into the management plans.

4.4 VEHICLES

Level of Service

The target level of service for Municipal vehicles is to maintain all vehicles such that they are in good repair with few breakdowns. This is achieved by continuing to complete regular maintenance and repair recommendations as may be outlined during regular inspections completed during maintenance servicing. All vehicles with recommended maintenance schedules as part of the manufacturer's warranty service should follow the schedules as described.

Achievement of the levels of service for vehicles can easily be determined by reviewing the performance of the existing vehicle, i.e. is the vehicle operating for its intended purpose without interruption? The municipality keeps records of the amount of down time for vehicles, machinery, and equipment. On a regular basis, this information is reviewed and considered when planning for replacement/repair work to ensure that municipal funds are spent effectively.

For the purposes of planning this desired level of service will be associated with a condition rating not to drop below POOR for a period greater than two years.

Risk Assessment

The consequences of not meeting the target level of service are dependent on the use of the vehicle, and the presence of a backup. For example, the consequences of failure of a plow truck in the winter with no backups will be higher than the risk of failure of a light duty pick-up truck used for worker transportation. For this asset category the Risk Assessment will be completed on an individual asset basis considering the following parameters:

- Does the vehicle/equipment have a backup?
- Is the vehicle/equipment scheduled for use within the year?
- Can a replacement vehicle/equipment be easily replaced/rented?

Level of Service

When an asset is nearing the end of its useful life, the Township should review the feasibility of owning or renting a piece of machinery, or equipment. The Township will also review replacement alternatives to ensure that the vehicle, machinery, or equipment is appropriate for its use. In the case of municipal vehicles for example, the vehicle used for road patrols could be a light duty pick-up truck rather than a large heavy duty truck. The replacement asset selected would likely be an upgrade to the disposed asset as over the course of the disposed assets lifecycle improvements in technology and efficiency would have been made. At the time of replacement, consideration will be given to newer vehicles with lower displacement engines, and improved fuel consumption rates when feasible.

4.5 EQUIPMENT AND RECREATION

Level of Service

The target level of service for Municipal equipment and recreation is to maintain the assets such that they are functional and safe. For the purposes of planning this desired level of service will be associated with a *condition rating not to drop below POOR.*

Risk Assessment

The consequences of not meeting the target level of service are dependent on the use of the equipment, and the presence of a backup. For example, the consequences of failure of the Township's Computer server will be higher than that associated with the Township's backup photocopier. For this asset category the Risk Assessment will be completed on an individual asset basis considering the following parameters:

- Does the equipment have a backup?
- Is the equipment scheduled for use within the year?
- Can replacement equipment be easily replaced/rented?

5 ASSET MANAGEMENT STRATEGY

This section will evaluate three asset management scenarios as follows:

Scenario 1: Unrestricted Replacement

This scenario involves immediate replacement of all assets to achieve a current condition rating of 10 or EXCELLENT for all assets. Following this initial investment the required annual reserve investment, which divides the full asset cost over its useful life, is calculated to project the savings required to replace the asset as soon as it has reached its estimated useful life. This scenario is not considered reasonable, but is completed in order to demonstrate the full needs of the community and highlight the requirement to manage an asset's improvement and replacement over the full extent of its useful lifespan.

Scenario 2: Replacement to Target Level of Service

This scenario will assess the replacement of assets to meet the Target Level of Service outlined in Section 4.

Scenario 3: Complete Asset Management Strategy

This scenario will cost the management of assets with the objective of meeting the Target Level of Service, and also implement the Risk Assessment in order to narrow the gap between asset needs and available funding. This scenario will also consider asset management activities such as preventative maintenance and component replacement to extend the lifespan of an asset.

The detailed breakdown of Scenario 3 is included in the Asset Inventory Spreadsheets.

5.1 SCENARIO 1- UNRESTRICTED REPLACEMENT

The immediate replacement of all assets will raise the current condition rating to EXCELLENT or 10, depending on the asset. The immediate costs of this Asset Management Scenario are as follows:

Table 7- Scenario 1, Immediate Replacement Costs

Asset Category	2020 Replacement Cost
Roads	$39,451,033
Structures	$16,750,744
Buildings	$3,636,746
Vehicles	$2,278,606
Equipment and Recreation	$563,482
TOTAL	**$62,680,611**

Under this scenario, following this complete asset replacement, assets will continue to be completely replaced as soon as they have reached their useful life expectancy. Based on this expectation and a 2.6% inflation rate, the Annual Reserve Investment required over the next 10 years to fund this as needed replacement is outlined in the below table.

Table 8- Scenario 1 Annual Reserve Investment

Scenario 1: Required Annual Reserve Investment ($)											
Asset Category	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**TOTAL**
Roads	See Above	539,690	553,722	568,119	582,890	598,045	613,594	629,548	645,916	662,710	**44,845,267**
Structures		205,995	211,351	216,846	222,484	228,269	234,204	240,293	246,541	252,951	**8,809,678**
Buildings		45,713	46,902	48,121	49,373	50,656	51,973	53,325	54,711	56,134	**4,093,654**
Vehicles		129,653	133,024	136,483	140,031	143,672	147,408	151,240	155,172	159,207	**3,574,496**
Equip & Rec		26,945	27,646	28,365	29,102	29,859	30,635	31,432	32,249	33,088	**832,803**
TOTAL		**947,996**	**972,645**	**997,934**	**1,023,880**	**1,050,501**	**1,077,814**	**1,105,838**	**1,134,589**	**1,164,090**	**72,155,898**

5.2 SCENARIO 2: REPLACEMENT TO TARGET LEVEL OF SERVICE

Within Scenario 2, assets will be replaced as required to meet the Target Level of Service. Summarizing Section 4, the Target Level of Service for each asset category is as follows:

Roads: Condition Rating $\geq$ 6, Minimum Road width of 6 m
Structures: Condition Rating $\geq$ FAIR
Buildings: Condition Rating $\geq$ FAIR
Vehicles: Condition Rating not to drop below POOR for more than 2 years
Equip & Rec: Condition Rating not to reach REPLACE

In this scenario, where asset inventories included detail on asset components, those components were scheduled for replacement to meet the level of service listed above. Where component level detail was unavailable, replacement of the full asset was assumed to be required.

Under this scenario, the required investment over the next 10 year period based on a 2.6% inflation rate is outlined below.

Table 9- Scenario 2: Required Annual Improvement Investment

Scenario 2: Required Annual Improvement Investment ($)											
Asset Category	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**TOTAL**
Roads	1,264,158	489,613	1,295,650	960,902	613,491	1,325,284	661,143	1,584,271	1,254,764	1,039,431	10,488,707
Structures	7,816,740	10,260	7,369	-	-	330,849	-	-	-	2,520	8,167,737
Buildings	293,578	-	18,419	-	-	-	-	195,817	-	36,961	544,776
Vehicles	-	-	708,822	-	123,120	538,650	-	-	517,104	-	1,887,696
Equip & Rec	-	14,194	13,764	-	-	-	13,322	-	-	-	41,280
TOTAL	**9,475,583**	**514,067**	**2,062,443**	**960,902**	**736,611**	**2,194,783**	**674,465**	**1,975,905**	**1,771,868**	**1,115,873**	**21,482,499**

In this scenario a significant improvement investment is required within four of the five asset categories in 2020. This is due to the need to catch up to target levels of service that have dropped below the threshold values leading into 2020. This scenario involves widening of 24 individual road assets (segments), complete replacement of five bridges, one building and five vehicles within the 2020 fiscal year. Beyond this initial catch-up year the required investment in roads sees spikes in years 2025 and 2027 corresponding with the 6 year and 7 year service life of gravel and surface treated road surfaces.

Not only is the initial and average annual improvement investment over the 10 year period greater than average funding available to the Township, but this needs scenario also has spikes that are unreasonable for the Township to finance.

5.3 SCENARIO 3: COMPLETE ASSET MANAGEMENT STRATEGY

This scenario will cost the management of assets with the objective of meeting the Target Level of Service, and also implement the Risk Assessment in order to narrow the gap between asset needs and available funding. This scenario will also consider asset management activities such as preventative maintenance activities and component replacement to extend the lifespan of an asset.

Under this scenario, the required investment over the next 10 year period based on a 2.6% inflation rate is outlined below.

Table 10- Scenario 3: Required Annual Improvement Investment

Scenario 3: Required Annual Improvement Investment ($)											
Asset Category	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**TOTAL**
Roads	209,949	317,441	1,097,876	1,306,532	996,218	1,606,521	786,847	1,384,258	893,893	549,890	9,149,424
Structures	1,146,761	20,343	-	-	1,941,826	38,315	2,001,536	7,480	-	50,395	5,206,656
Buildings	-	-	-	-	53,870	26,525	-	20,941	-	-	101,336
Vehicles	50,274	-	220,590	45,000	-	-	41,040	-	-	614,574	971,478
Equip & Rec	-	-	-	-	14,194	-	13,322	13,764	-	-	41,280
TOTAL	1,356,710	560,624	1,320,715	1,356,398	3,006,108	1,671,361	2,801,705	1,716,362	893,893	736,718	15,470,175

This asset management scenario requires an average annual investment of approximately $ 1.5 million over the projected 10 year plan cycle.

This asset management scenario includes a much higher need for road improvements compared to previous plans. This is due to decreased base condition ratings as a result of underfunding in previous years. It is understood that the Township will obtain an updated Roads Needs study in 2021. Following this study, an assessment of the assumed road asset rate of condition decline can be made by comparing to the previous study.

Within this scenario a significant spike in required investment is seen during each year that a major bridge structure requires replacement.

The asset management strategies utilized for each asset category to generate the above needs summary are outlined in the following sub-sections.

5.3.1 Roads

Under this scenario the following management strategies are included for the road assets:

- The risk based parameters are utilized to reduce the number of roadways to be widened,
- The risk based parameters are utilized to allow roads with a low AADT fall below the target level of service, and,
- Preventative maintenance is incorporated on H.C.B. and L.C.B. roadways- A slurry seal is applied to the road surfaces 2-3 years after initial construction.

Under this management scenario, for the projected 10 year timeline, the number of road segments that are allowed to drop below a condition rating of 5 are presented in the table below.

Table 11- Scenario 3: Number of road segments at a condition rating less than 5.

Road Type	YEAR									
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
# Gravel Roads below 5	0	0	3	3	0	0	0	1	2	4
# L.C.B. Roads below 5	0	0	0	1	1	0	0	0	0	0
# H.C.B. Roads below 5	0	0	0	0	0	0	0	0	0	0

Additional maintenance activities to consider in the management of the road assets are as follows:

Ditching:

Roads require regular roadside maintenance activities such as ditching and brushing to ensure adequate drainage of the road subgrade. Poor subgrade drainage will lead to premature deterioration of the road base which will directly impact the deterioration of the surface.

The following maintenance practices are employed on a regular basis to help prolong the lifespan of roadway assets. The quantities provided are intended to be used as guideline:

- Right-of-way brushing,
- 6000m of Ditch Cleanout annually, and,
- Culvert cleanout/flushing.

Surface treatment options:

Surface treatment roads would receive an application of single course surface treatment overlay to extend its life, however if the road surface is uneven, the overlay will also be uneven. Three methods of surface rehabilitation have been considered for cost evaluation and projection in the current strategy.

- Surface Only → to be implemented where existing road cross section is in fair condition.
- Surface and Granular Replacement → Replacement of Granular A and Surface treatment.
- Surface, Granular and Pulverization→Full pulverizing of road top, replacement of Granular A and Surface treatment.

The surface treatment type to be implemented should be guided by the Road Needs Study.

Base Improvement:

Where improvement of a road base is required, and outlined within the Road Needs Study, the improvement date can be entered to project a cost. As the lifespan of the base is magnitudes greater than the surface the asset condition does not consider the age of the base.

5.3.2 Structures

Under this scenario the following management strategies are included for the Structure assets:

- The risk based parameters are utilized to selectively allow structure components to fall below the target level of service before replacement, and,
- Evaluation of component replacement to extend the lifespan of the full asset.

In this scenario, it is still necessary to fully replace three bridge structures: North Pickerel Lake Road Bridge, South Horn Lake Road Bridge and East Road Bridge. Each of these structures was initially constructed circa 1940, and multiple components of each structure have reached a condition rating of REPLACE.

Additional maintenance activities to consider in the management of the structure assets should also be noted. As with all assets, bridges and structural culverts require regular maintenance activities such as sweeping and pressure washing to clear winter sand buildup, painting, as well as debris removal to ensure proper flow hydraulics to minimize erosion and scouring potential.

Renewal and rehabilitation activities of bridge and structural culverts are carried out in accordance with the OSIM Inspections Forms, completed by or under the direction of a Professional Engineer on a biennial basis. These activities are typically evaluated by the Professional Engineer at the time to ensure the costs are economical.

In addition, the following maintenance practices will be employed on a regular basis to help prolong the lifespan of structure assets:

- Annual spring bridge cleaning (deck, deck drains, curbs, bearings),
- Monthly removal of debris from waterway,
- Removal of corrosion from exposed steel surfaces,
- Priming/painting/coating of steel, and,
- Check for loose bolts (Bailey bridges).

Replacement activities are generally considered once maintenance, renewal and rehabilitation activities are no longer feasible or economical to undertake.

5.3.3 Buildings

Under this scenario the following management strategies are included for the building assets:

- The risk based parameters are utilized to selectively allow building components to fall below the Target Level of Service before replacement,
- Evaluation of component replacement to extend the lifespan of the full asset, and,
- Allowing select assets to fall out of circulation without replacement.

It is understood that four building assets are planned to be removed from circulation once they reach their useful life. Therefore, while their condition rating may fall below the target level of service, there is no planned investment for these assets. These building assets include the Berriedale Community Centre, the Information Centre, the Katrine Community Centre and the Katrine Canteen/Washrooms.

Component information for much of the building asset group is unavailable and as such, costs for component improvement investments to extend the overall lifespan of the facilities could not be calculated. Over the next 10 year period, following the above management strategy, it is anticipated that component improvement investments will be required for the Municipal Garage including Windows/Doors, Overhead Doors, Eaves, Roof Flashings, and Heating- Source,

Additional maintenance activities to consider in the management of the building assets should also be noted. As with all assets, buildings require regular maintenance activities such as cleaning, painting, repairs to roofs, and HVAC systems to maintain proper functioning of the asset. Renewal and rehabilitation activities of buildings should be carried out in accordance with the inspection recommendations.

Replacement activities are generally considered once maintenance, renewal and rehabilitation activities are no longer feasible or economical to undertake. As can be seen in the Capital Asset Summary, when replacement is considered, the replacement asset does not need to be identical to the existing asset, such as replacing older windows and doors with new more energy efficient ones.

5.3.4 Vehicles

Under this scenario the following management strategies are included for the vehicle assets:

- The risk based parameters including vehicle backup, anticipated use, and ease of replacement, are utilized to selectively allow vehicle components to fall below the target level of service before replacement.

In this asset scenario seven vehicles will be rehabilitated or replaced over the next 10 year period;

- ARM-VEH-002 FORD SRW PICKUP (2023)
- ARM-VEH-005 2007 STERLING MODEL STE (2022)
- ARM-VEH-007 2013 STRONGCO G9408 GRADER (2029)
- ARM-VEH-009 LIEBHERR LITRONIC RUBBER TIRE EXCAVATOR (2029)
- ARM-VEH-010 JOHN DEER LOADER (2020)
- ARM-VEH-013 THOMPSON CULVERT STEAMER (2027)
- ARM-VEH-015 2015 LOAD STAR FLOAT TRAILER (2028)

Additional maintenance activities to consider in the management of the vehicle assets are as follows:

Vehicles, machinery, and equipment also require regular maintenance activities such as servicing in accordance with the manufactures operating manuals to minimize potential for breakdowns. In addition, failing to complete these maintenance intervals could void the manufacturer warranty in the event there is a concern.

5.3.5 Equipment and Recreation

Under this scenario the following management strategies are included for the equipment and recreation assets:

- The assets will be allowed to exceed the target level of service if the Township has no intention to maintain this asset in circulation/service. If that is the case the asset will be removed from circulation as soon as it is deemed unsafe.

Under this scenario four assets will require replacement within the next 10 year period as follows:

- ARM-EQP-001 CANNON- C5035 PHOTOCOPIER (2026)
- ARM-EQP-005 COMPUTER SERVER (2024)
- ARM-EQP-006 WEBSITE (2024)
- ARM-REC-004 FOLDING TABLES AND CHAIRS (2027)

One asset in this category, the Cannon- IR 3000 Photocopier (ARM-EQP-002), is allowed to reach a depreciating condition rating of REPLACE as it will be reallocated as opposed to replaced and used as a backup machine.

6 FINANCING STRATEGY

Establishment of a financial plan is critical to the successful implementation of an asset management plan. The following section will summarize current financing sources and provide a comparison between historic financing and projected needs to maintain the Municipal Infrastructure at acceptable levels of service.

6.1 CURRENT FINANCING SOURCES

Over the past three years, the Municipality has invested approximately $3.2 million into capital asset projects. The table presented below describes the budgets over the past three years and details the source of the monies allocated to each asset category.

Table 12- Historic breakdown of funding sources

Historic Breakdown of Funding Sources				
Source	**2017**	**2018**	**2019**	**Average**
Municipal Funds	$ 243,275	$ 470,912	$ 603,754	$ 439,314
Government Grants	$ 151,695	$ 167,473	$ 1,091,395	$ 470,188
Reserves	$ 121,831	$ 136,173	$ 216,303	$ 158,102
Other	$ 4,151	$ 10,670	$ 225,867	$ 80,229
TOTAL	$ 520,952	$ 785,227	$ 2,137,319	$ 1,147,833

Municipal Funds

Municipal Funds include funds collected from the Township's tax base. Over the past three years Municipal Funds have been allocated to each asset group as outlined in the table below.

Table 13- Historic Allocation of Municipal Funds

Historic Allocation of Municipal Funds				
Asset Group	**2017**	**2018**	**2019**	**Average**
Roads	$ 215,415.09	$ 315,946.25	$ 245,469.72	$ 258,944
Bridges	$ -	$ 96,818.82	$ 5,594.58	$ 34,138
Buildings	$ -	$ -	$ 8,606.08	$ 2,869
Vehicles	$ -	$ 10,043.73	$ 269,276.34	$ 93,107
Equipment and Recreation	$ 27,859.99	$ 48,102.89	$ 74,807.35	$ 50,257
Total	$ 243,275	$ 470,912	$ 603,754	$ 439,314

The three year average investment for Vehicles is higher than typical due to a significant investment in a new heavy industrial vehicle in 2019. Similarly, investment into the Equipment and Recreation asset category is inflated due to significant expenditures on landfill compaction equipment, and the installation of a new boat launch.

For this financing strategy the Average Annual Allocation for Municipal Funds will be assigned to each asset group based on the annual average trends for the past three years as well as typical expenditure

expectations. The allocated funds will be projected forward over the ten year financing timeline, based on an inflation rate of 2.6% per year, is outlined in the below table.

Table 14- 2020 Allocation of Municipal Funds for Financing Strategy

2020 Allocation of Municipal Funds for Financing Strategy	
Asset Group	**Municipal Funds Allocated (2020 $)**
Roads	$275,000
Bridges	$80,000
Buildings	$20,000
Vehicles	$60,000
Equipment and Recreation	$15,000
Total	**$ 450 000**

The municipal allocation to the Vehicles as well as Equipment and Recreation asset groups is less than the three year average presented above due to some atypical spending trends and high value purchases made over the past few years.

The previous AMP version had a total annual Municipal Funds investment value of $465,000 (2015 dollars), which equates to approximately $515,000 in 2020 dollars. However, as that value is not consistent with the spending trends over the last 3 years it is suitable to revise.

Within the financing strategy these set budgets will be carried forward in each year. In years where the set budget exceeds the required expenditures, the excess funds will be allocated to Reserves to be carried forward to a year with higher needs.

Grants

Grants have been provided to the Township over the last three years to help fund Roads, Bridges, and Equipment/Recreation asset groups. The average grant funding, broken down by asset category, is outlined in the below table.

Table 15- Historic Allocation of Grant Funds

Historic Allocation of Grant Funds				
Asset Group	**2017**	**2018**	**2019**	**Annual Average**
Roads	$ 134,903.26	$ -	$ 238,896.88	$ 124,600
Bridges	$ -	$ 167,473.33	$ 822,498.27	$ 329,991
Buildings	$ -	$ -	$ -	$ -
Vehicles	$ -	$ -	$ -	$ -
Equipment and Recreation	$ 16,792.22	$ -	$ 30,000.00	$ 15,597
Total	**$ 151,695**	**$ 167,473**	**$ 1,091,395**	**$ 470,188**

As of 2019 the Township receives annual grants from the Provincial Government specifically for its Roads Assets in the amount of $74 000 and will continue to do so going forward. Beyond this value,

grant funding is unpredictable and is often based on needs based funding. Some large capital projects, such as bridge replacement, are beyond the Township's means to fund without additional grants.

For this financing strategy the Annual Allocation for Grants assigned to each asset group is outlined in the below table:

Table 16- Allocation of Grant Funds for Financing Strategy

Allocation of Grant Funds for Financing Strategy	
Asset Group	**Grant Funding Allocation**
Roads	$74 000 in 2019 and beyond
Bridges	Assume Grants in designated project years in the amount of 2/3 of the total project cost
Buildings	$ -
Vehicles	$ -
Equipment and Recreation	$ -
Total	**variable**

Reserve Funds

The Township finished the 2019 fiscal year with $1.4 million in capital reserve funds. Over the past three years reserve funds have been utilized sparingly. The allocation of these funds over the last three years by asset category is outlined below:

Table 17- Historic Allocation of Reserve Funds

Historic Allocation of Reserve Funds				
Asset Group	**2017**	**2018**	**2019**	**Annual Average**
Roads	$ 9,233.29	$ 103,967.36	$ -	$ 37,734
Bridges	$ 15,269.85	$ 16,593.88	$ 89,482.21	$ 40,449
Buildings	$ 90,997.79	$ 9,287.55	$ 42,924.26	$ 47,737
Vehicles	$ -	$ -	$ -	$ -
Equipment and Recreation	$ 6,330.32	$ 6,323.81	$ 83,896.42	$ 32,184
Total	$ 121,831	$ 136,173	$ 216,303	$ 158,102

Within this financing strategy reserve funds will be tracked per asset category. Municipal Funds unused in any given year will be allocated to the reserves bank and allowed to collect interest at a rate of 1% per annum. Where grants and municipal funding sources fall short of the investments needs for a given category, Reserve Funds will be assigned manually. Reserve use will be allowed to cross over between asset categories.

Other Sources

Other available funding sources include investment interest, donations and the sale of assets. The average funding from these other sources, broken down by asset category, is outlined in the below table.

Table 18- Historic Allocation of Other Funds

Historic Allocation of Other Funds				
Asset Group	**2017**	**2018**	**2019**	**Annual Average**
Roads	$ -	$ -		$ -
Bridges	$ -	$ -	$ 26,855.29	$ 8,952
Buildings	$ -	$ -	$ 177,058.70	$ 59,020
Vehicles	$ -	$ -		$ -
Equipment and Recreation	$ 4,150.62	$ 10,669.88	$ 21,952.81	$ 12,258
Total	$ 4,151	$ 10,670	$ 225,867	$ 80,229

These funding categories are not a typical or predictable source of revenue and, within the projected funding strategy, will be applied on an as need basis, provided it is applicable.

6.2 CURRENT NEEDS VS. AVAILABLE FINANCING

As presented previously, the total replacement cost of the Municipality's assets was calculated to be approximately $ 63 million dollars (2020 Dollars). The Municipality is not required to budget for the full replacement value of all its assets, as portions of assets only require an initial investment followed by further re-investment to maintain acceptable levels of service.

It was also calculated that the annual reinvestment should be an average of approximately $ 0.9 million per year in order to sustain existing services at an appropriate level of service.

Using the distribution of financing sources outlined above as a base model for future financial planning purposes, the figure below outlines a forecast of the required annual expenditures into municipal infrastructure for the 10-year period of 2020 through 2029 as well as the anticipated shortfall in required spending for all infrastructures included in this plan.

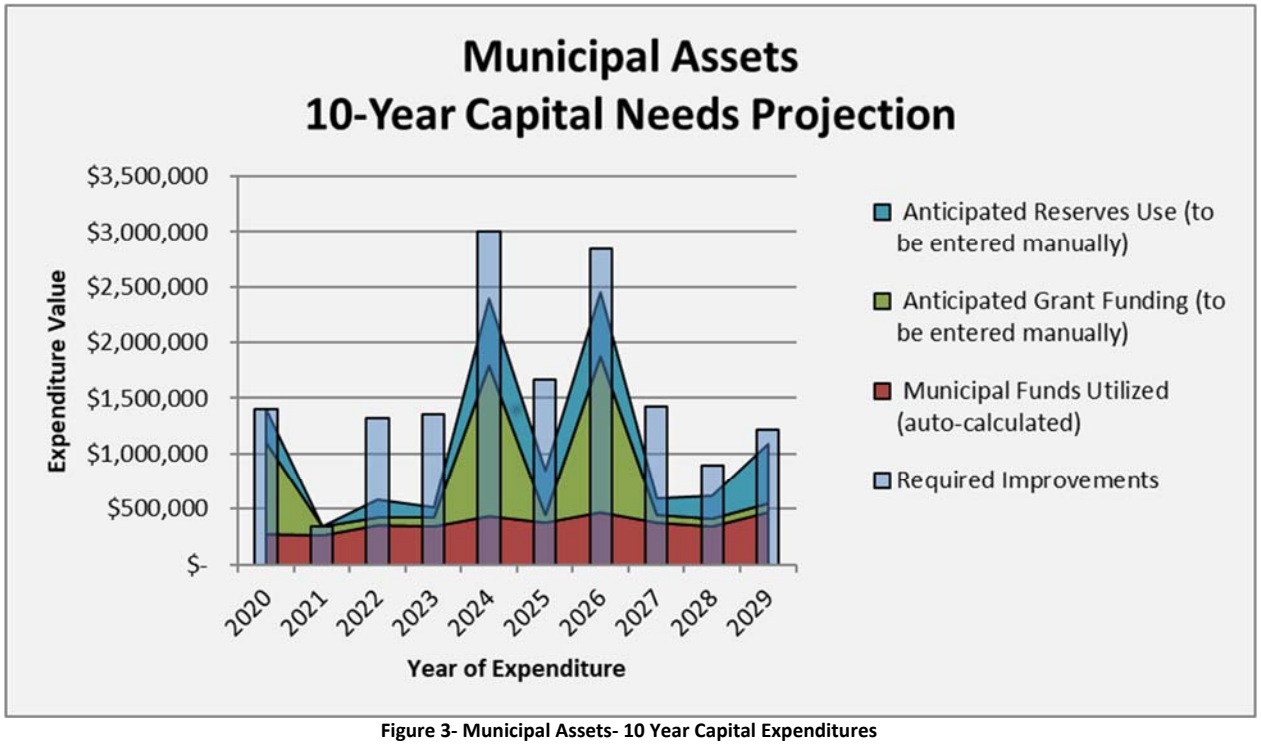

Figure 3- Municipal Assets- 10 Year Capital Expenditures

Table 19- Municipal Assets Annual Funding Vs. Needs Gap

Funding vs. Needs Difference ($)									
2020	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
0	**0**	**(734,390)**	**(835,520)**	**(617,483)**	**(819,863)**	**(392,060)**	**(831,131)**	**(282,208)**	**(129,425)**

There is a significant project funding gap for each of the next 10 fiscal years ranging between $129 thousand and $835 thousand per year.

It should be noted however, that unless the funding gap in any given year is overcome, the project requirements and asset needs will carry over to the next year increasing the subsequent funding gap. Furthermore, not meeting the funding gap in any given year will further allow assets to deteriorate, possibly beyond a condition of repair or reclamation, resulting in a higher required investment for full asset replacement.

In the development of the strategy, assignment of reserve funds was completed to first fully fund the equipment and recreation, vehicle, and building asset categories. This is because these categories do not typically have a need assigned every year, and the balance in their specific reserve bank is high. Following this, reserve investments were then assigned to close the gap on the needs for Bridges due to the high consequence of failure or closure of a bridge structure if funding cannot be supplied when required. Following these assignments of the reserve funds, a minimal value remained to assign to the

road asset category up until year 2024. Therefore, the funding gap is primarily represented within the Roads asset group. Throughout the lifespan of this plan, if additional financing is provided for any of the asset groups, it is recommended that the previously assigned reserve funds be instead allocated to the Roads asset group as a means of narrowing the needs gap.

Within this plan Reserve funding is viewed as an extremely liquid account to help balance costing from one year to the next. The reserves fund represents the surplus of unspent municipal funds assigned to each asset group in any given year. In previous plans, recommended reserve investments were calculated to be the replacement cost of an asset divided over the full useful life of an asset, and it was recommended that this value be allocated to reserves each year in addition to the annual improvement investments. That recommendation for reserve savings on top of capital budgets is not considered reasonably attainable. If additional reserves are to be incorporated into this plan, it is recommended they be added directly to this net reserves fund to allow more flexibility in decision making with respect to project timing.

The total amount held in capital reserves as well as annual reserve spending broken down by asset category is outlined in the below figure.

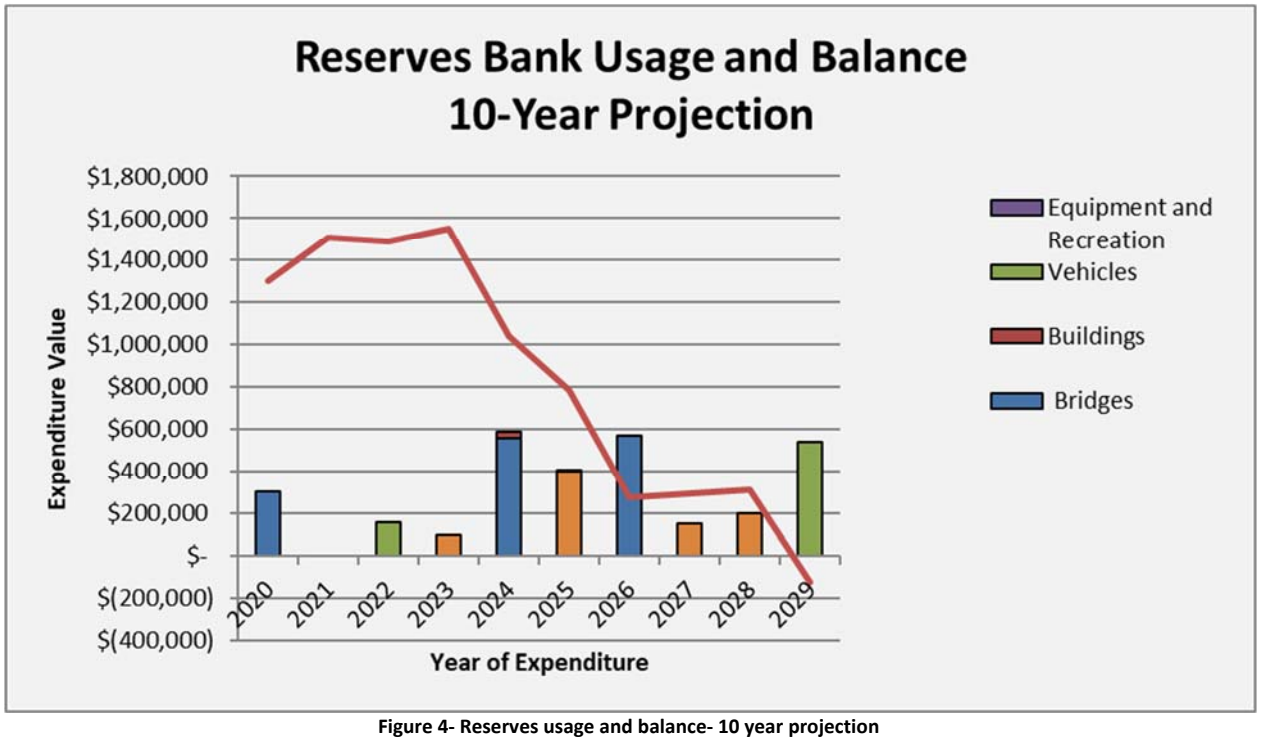

Figure 4- Reserves usage and balance- 10 year projection

The following sections present a more detailed breakdown of the required reinvestment for each of the asset groups included in this comprehensive asset management plan.

6.2.1 Roads

Investment into road assets is comprised primarily of municipal and grant funds. The use of reserve funds for road expenditures was applied sparingly, limited to years of the highest funding gap, and where reserves were available. This has resulted in a shortfall between required and available fund ranging from approximately $129 000 to $981 000 per year between 2020 and 2029.

It is important to note that this annual shortfall will compound, and some assets will drop below the target level of service so much that they will require a greater investment in the future. The presentation of this shortfall outlines the goal for additional funding over the short term in order to meet a needs/financing balance within the projected 10 year period.

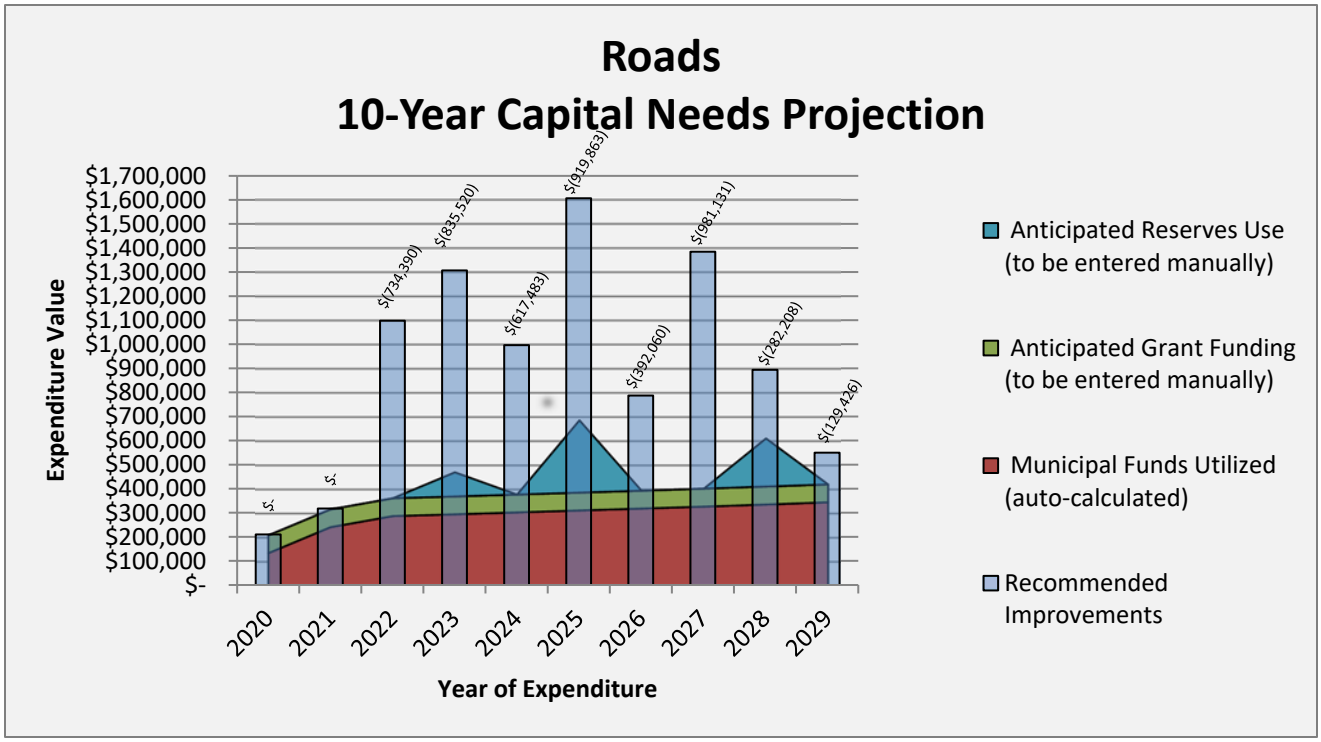

Figure 5- Roads: 10 Year Capital Needs Projection

6.2.2 Structures

This plan includes the complete replacement of three structures in 2020, 2024 and 2026. Due to the level of risk associated with a funding shortfall for this asset category, reserve funds have been applied as required to fully fund the projected needs.

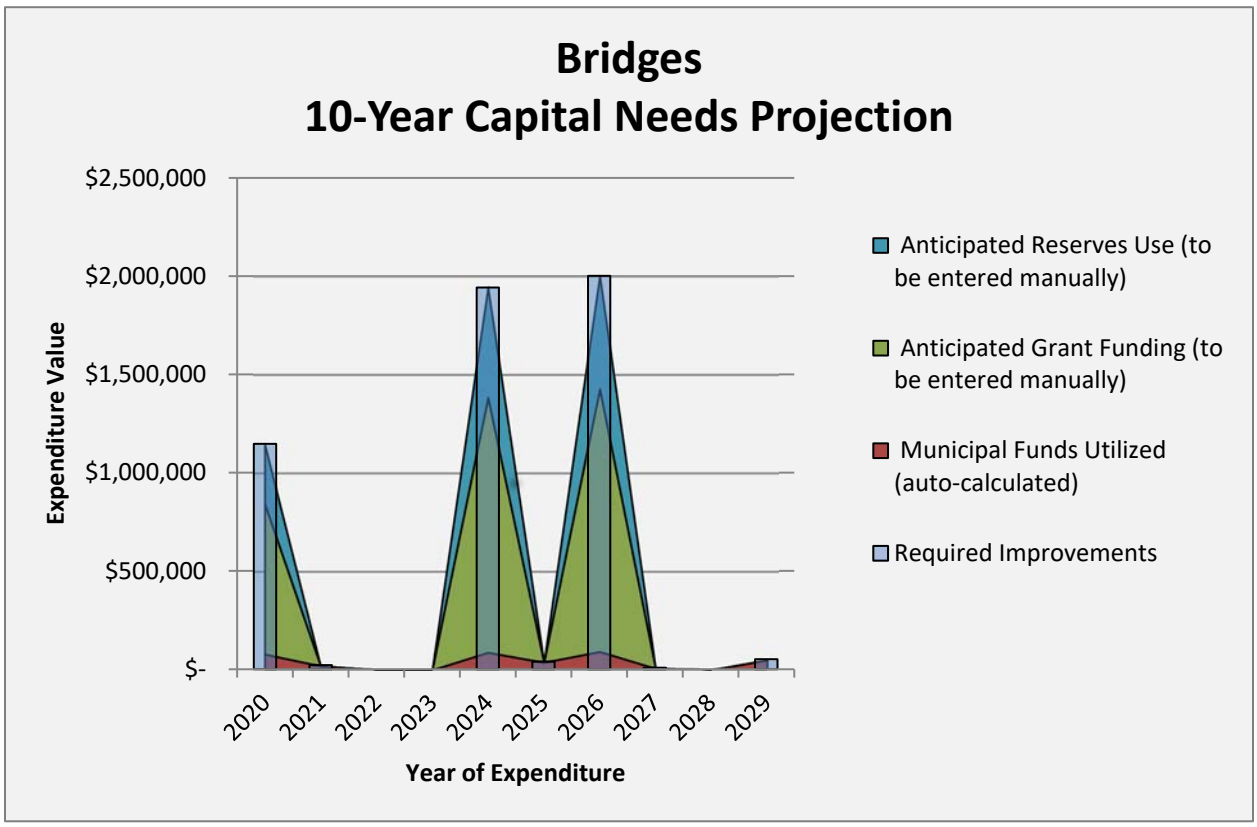

Figure 6- Bridges: 10 Year Capital Needs Projection

6.2.3 Buildings

The expected needs over the next ten years for building assets are met through a combination of annual municipal funds and reserves as outlined in the below figure.

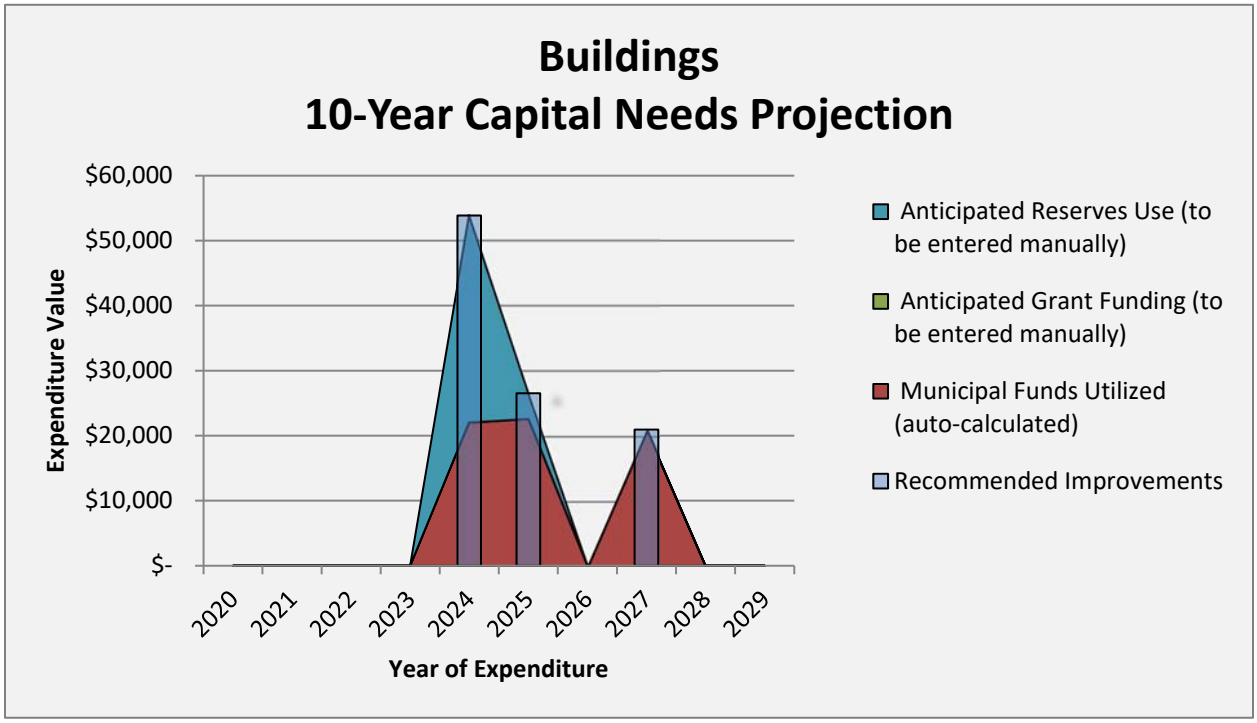

Figure 7- Buildings: 10 Year Capital Needs Projection

6.2.4 Vehicles

The expected needs over the next ten years for vehicle assets are met through a combination of annual municipal funds and reserves as outlined in the below figure.

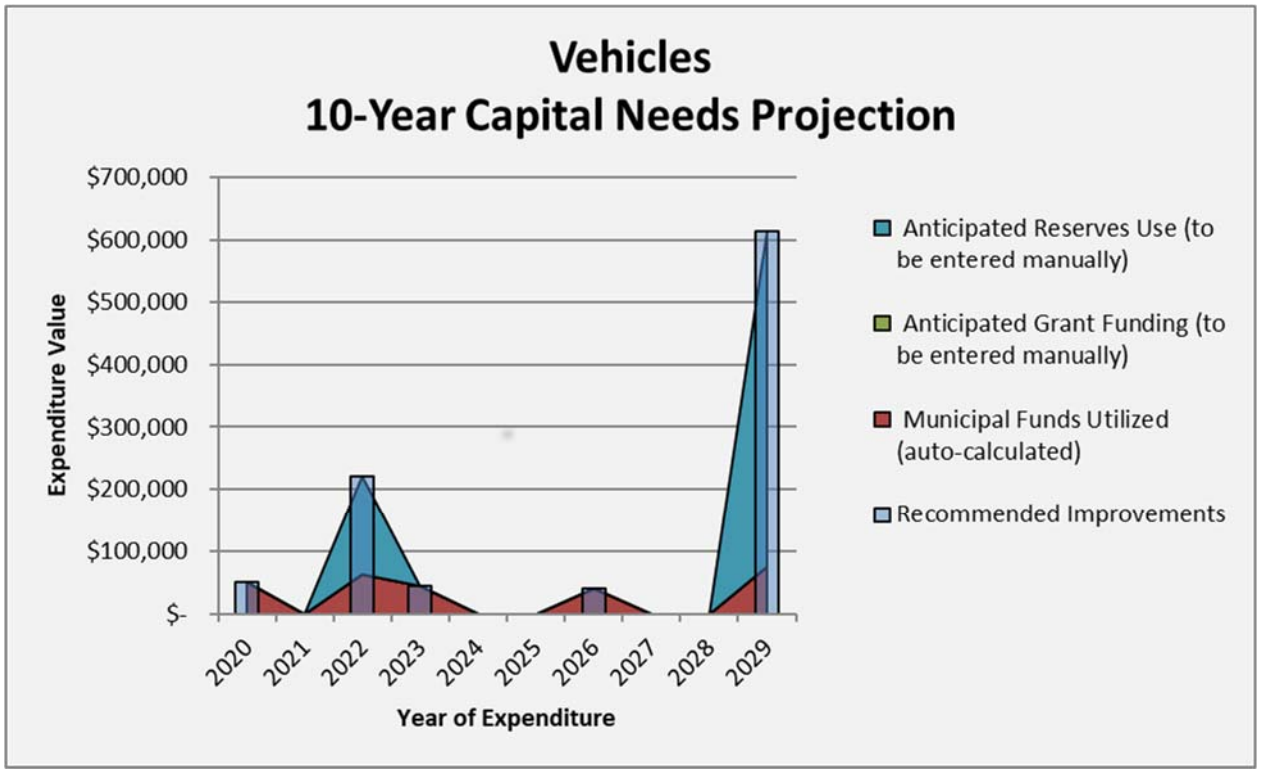

Figure 8- Vehicles: 10 Year Capital Needs Projection

6.2.5 Equipment and Recreation

The expected needs over the next ten years for equipment and recreation assets are met through a combination of annual municipal funds and reserves as outlined in the below figure.

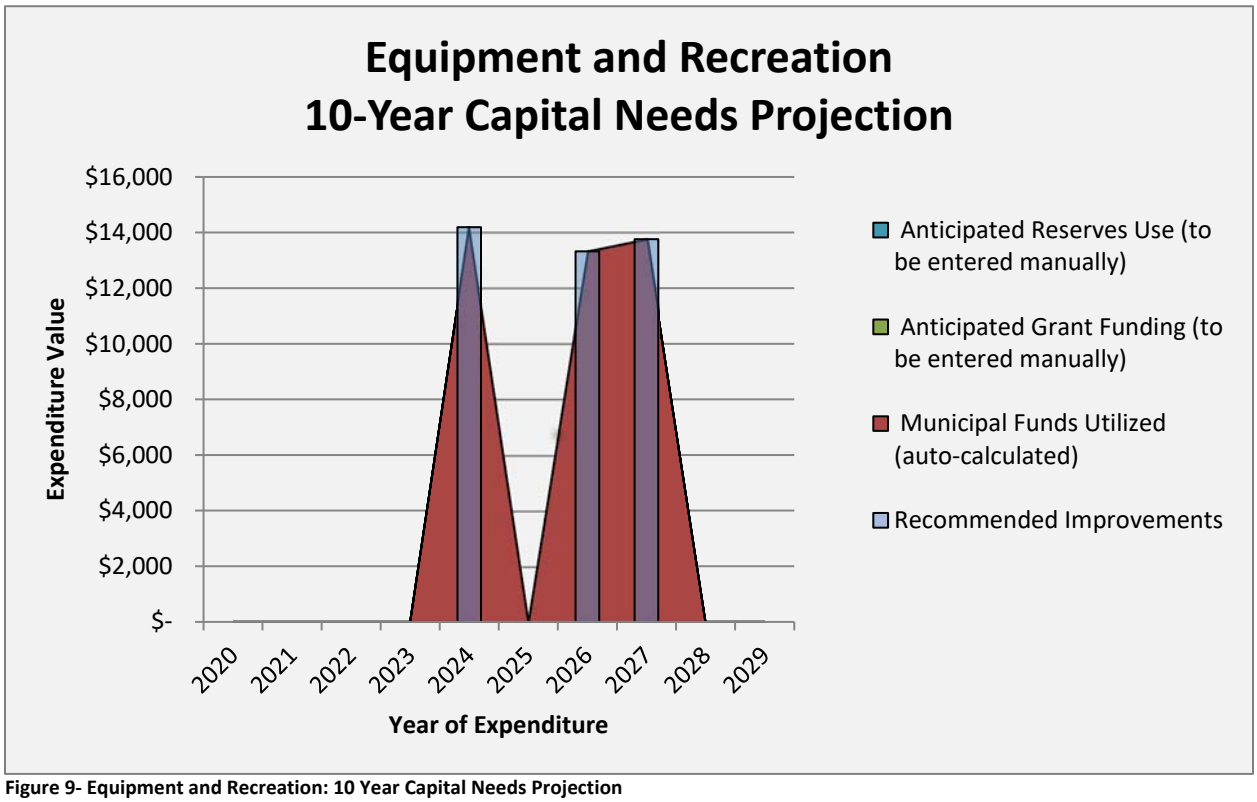

Figure 9- Equipment and Recreation: 10 Year Capital Needs Projection

6.3 PROCUREMENT METHODS

The Municipality currently has procurement by-laws in place for use when considering various projects; however, additional investigations and discussions could be undertaken to pool resources with neighboring municipalities. The creation of an amalgamated tender would allow for a higher volume of service by a supplier, which would reduce the overall cost per municipality. This approach would be applicable to road resurfacing projects which are short duration and easily divisible by municipality.

6.4 FINANCING OPTIONS

Suggested ways of meeting the funding shortfall identified within the Roads and Structures asset categories are listed below, however whether they are implemented or not is a decision to be made by Council.

- Increasing municipal taxes;

- Implementing or increasing user fees;
- Establishing fundraising/donation campaigns for special projects (ie. community centre build);
- Short term investment of available reserve funds;
- Financing projects; or
- Accepting decreased levels of service.

7 CLOSURE

This comprehensive asset management plan will require on-going updates, and improvements to the methodologies of data collection for developing more accurate inventory information. The ability for the Municipality to leverage its knowledge of infrastructure and apply the best Asset Management practices at the time will result in positive improvements in municipal infrastructure. This document will also provide the means to effectively apply for external funding opportunities as they may become available.

Continued contribution of municipal funds, contributions from Government grants into capital projects, and incorporation of other funding sources to narrow the needs gap will help ensure the sustainability of the Municipality's infrastructure assets for years to come.

LIMITATIONS AND QUALIFICATIONS

This comprehensive asset management plan has been prepared for the exclusive use of the Township of Armour by Tulloch Engineering Inc. This plan is intended to be a living document, updated on an annual basis to project future costs and expenditures on a planning basis only. This plan is not intended to establish annual budgets but rather act a guide to identify the priority projects. All cost projections presented in this report must be verified through detailed cost estimation at time of consideration for the works and subsequent budgeting.

8 DEFINITIONS

AMP – Asset Management Plan

AADT – Average Annual Daily Traffic Count

Expenditure Forecast – Average Annual Historic Expenditure projected over 10 years with inflation;

Guide – Ministry of Infrastructure – *Building Together – Guide for Municipal Asset Management Plans*

HCB – High Class Bituminous Surface (Hot Mix Asphalt)

Historic Expenditure – Average of expenditures made over the past three years

LCB – Low Class Bituminous Surface (Surface Treatment)

OSIM – Ontario Structure Inspection Manual Bridge Inspections