MUNICIPALITY OF EAST FERRIS
2025 ASSET MANAGEMENT PLAN

DECEMBER 2025

Preface

This Asset Management Plan (AMP) is intended to describe the infrastructure owned, operated, and maintained by the Municipality of East Ferris to support its core services. It is a compilation of studies and work undertaken by the Municipality in its asset management planning and implementation over the past few years. The plan is aligned to the content and format described in the Province of Ontario's *Building Together: Guide for Municipality Asset Management Plans* to meet the requirements of Ontario Regulation 588/17 and to guide long-term infrastructure and financial planning.

This Plan was developed by municipal staff utilizing internal data, and data found within reports the municipality had commissioned through various consultants and partners:

- Road Needs Study - WSP Canada Inc. (2022)
- Bridge Management Study Report - HP Engineering Inc. (2024)
- Culvert Evaluation and Survey - McIntosh Perry Consulting Engineers Ltd. (2023)
- Traffic Sign Retroreflectivity Inspections and Inventory - Advantage Data Collection Ltd. (2024)
- Capital Replacement Planning Report for Facilities - MPAC (2025)
- Municipality of East Ferris – Internal data (Assets: street lighting; guiderails; land improvements; vehicle and equipment; and recreational amenities).

This document identifies what has been achieved, what is being done, and what needs to be done to ensure core services provided to citizens, businesses, and institutions attain sustainability. This document provides information regarding the implementation of asset management in the Municipality of East Ferris which describes the current state of the assets with recommendations regarding the next steps to implement a comprehensive approach to asset management across the municipality. While this document contains some details, many external documents contain additional levels of detail and are referenced throughout this document.

Disclaimer

This AMP remains a strategic planning tool and does not commit the municipality to specific projects, funding levels, or service outcomes. Council will continue to set all investment priorities and service levels through the annual budget and capital planning process. All financial figures in this document are high-level estimates derived from asset registers, staff input, condition assessments, and industry costing. These estimates may change as new studies, inspections, or detailed designs are completed. This document should not be used for litigation, claims, or any purpose beyond its intended scope.

Plan Updates

Since Regulation 588/17 came into effect, two AMP reports have been prepared and approved by Council: Asset Management Plan – December 2013 and Asset Management Plan – December 2015.

This AMP, *Municipality of East Ferris 2025 Asset Management Plan*, satisfies the requirements under section 6 of Ontario Regulation 588/17.

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1. EXECUTIVE SUMMARY

In the fall of 2012, the Province of Ontario, introduced a requirement for an Asset Management Plan (AMP) as a prerequisite for municipalities seeking funding assistance for capital projects from the province; effectively creating a conditional grant. To qualify for future infrastructure grants, an AMP had to be developed and approved by municipal Council.

This AMP includes all municipal infrastructure assets as required by O. Reg. 588/17: core municipal infrastructure assets (roads, bridges, and culverts) and other municipal infrastructure assets (facilities, street lighting, traffic signs, guiderails, land improvements, vehicle and equipment, and recreational amenities).

The Plan is intended to provide a preliminary reference for renewing, operating, maintaining, building, replacing and disposing of municipal infrastructure assets. As the plan is a living document, it needs to be updated on a regular basis to reflect additional information as well as changing needs. The plan is based on the guidelines provided in the Ontario Ministry of Infrastructure's *Building Together: Guide for Municipal Asset Management Plans* and Ontario Regulation 588/17.

This Plan reflects on the current and desired system condition, level of service, optimal asset management and financial strategies based on currently available data and information on the road and bridge assets. Municipal data collection is ongoing, and the plan will be updated over time as more data in terms of condition, capacity, expansion and risks are available through ongoing data collection, modelling and master planning programs. The first report was approved in 2014 representing the information available at that time. The current report reflects additional information provided for building assessments, roads and structures.

Although the new plan was prepared using various new evaluation reports and surveys completed in the last few years, there were still some data gaps requiring assumptions. These assumptions are detailed in each section of this report. As additional information continues to be gathered over time, the municipality will continue to update this plan and treat it as a living document.

1.1 REPLACEMENT COST

Table 1 provides a summary of the quantity of assets included in the AMP and the replacement costs as of the end of 2024.

Asset Type	Length / Quantity	Replacement Cost
Roads	107.8 km	$60,878,814
Structures	2 bridges + 1 shared bridge each	$2,353,000
Storm Drainage	6285.7 m	$8,005,837
Street Lighting	99 each	$354,900
Buildings	11 each	$37,133,640
Other Land Improvements	52 each	$2,541,256
Vehicles	13 each	$4,165,000
Equipment	42 each	$605,096
Signs	514 each	$71,750
Guiderails	2315.5 m	$392,338
TOTAL		$116,501,630

Table 1: Full Asset Replacement Cost – 2024

Figure 1 provides a distribution of replacement costs by asset type as of the end of 2024

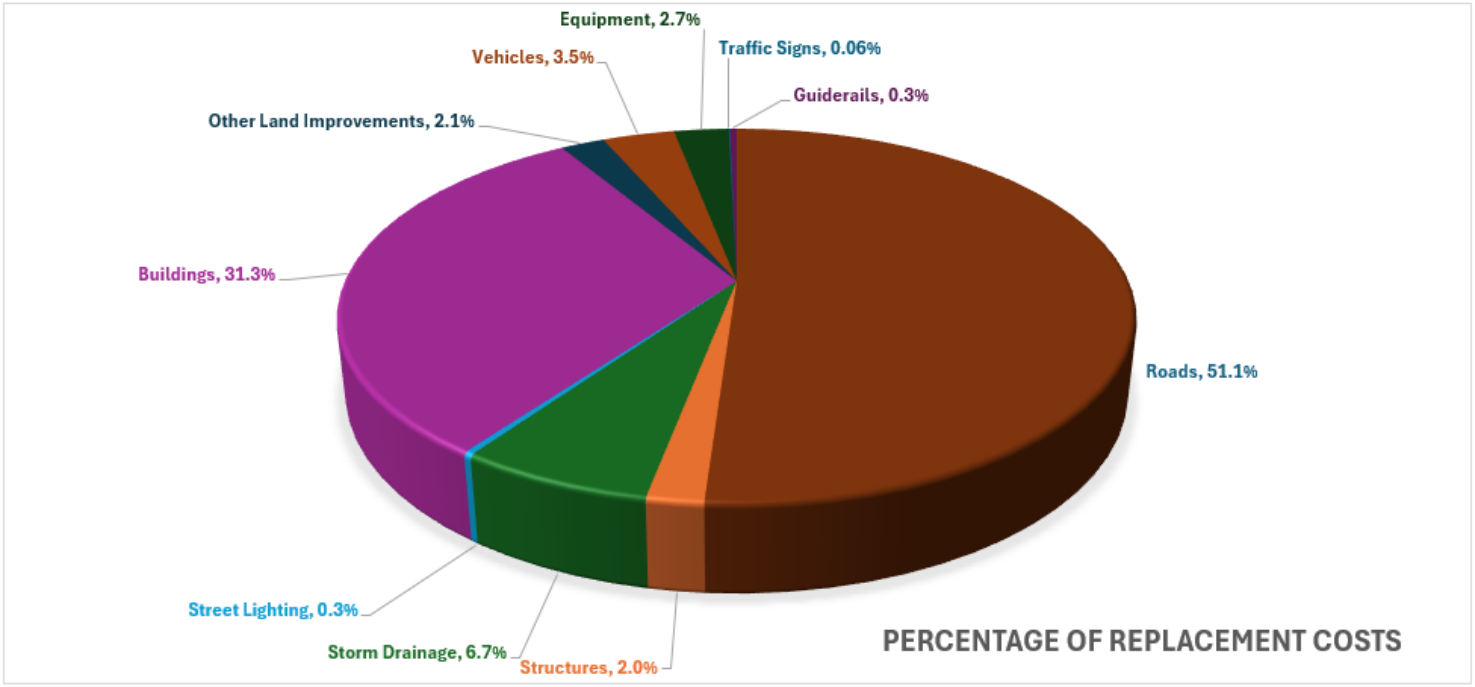

Figure 1: Percentage of Replacement Costs by Asset Type

1.2 CURRENT NEED

In terms of current needs based upon condition and remaining service life, East Ferris needs to invest $11.55 million "now" to replace key infrastructure. Since the annual capital budget is on average approximately $1 million, there is an existing infrastructure deficit. However, the financial plan in this report will provide for the long-term preservation at current levels of service. This is addressed further in the report.

Table 2 provides a breakdown of our current needs by asset type.

Asset Type	Current Need	Percentage of Current Need
Road	$ 4,964,163	43.0%
Structure	$ 200,400	1.7%
Storm Drainage	$ 325,334	2.8%
Street Lighting	$ 15,375	0.1%
Buildings	$ 3,500,000	30.3%
Building Improvement	$ 1,758,956	15.2%
Other Land Improvement	$ 364,362	3.2%
Vehicle	$ 140,000	1.2%
Equipment	$ 270,000	2.3%
Sign	$ 5,300	0.0%
Guiderail	$ 5,000	0.0%
TOTAL NEEDS	$ 11,548,890	100%

Table 2: Current Needs ($ and Percentage of Need)

1.3 FINANCIAL PLANNING

With a comprehensive asset management approach as outlined in this plan, the combination of repair and maintenance can reduce the cost of replacement and/or defer reconstruction. This is shown in the table below.

In assessing the Municipality's state of the infrastructure, we examined and graded both the current condition and remaining service life of our assets as well as the Municipality's financial capacity to fund the average annual requirement, by asset category, for sustainability (funding versus need).

In order for an AMP to be effectively put into action, it must be integrated with financial planning and long-term budgeting.

Based on the Road Needs Study, the average recommended annual investment for our roads is $1.3 million in order to address the total needs. There is no average recommended annual investment for buildings (budget for major building components and not regular maintenance); however, the 10-year building need is identified.

If we maintain the current budget for the next ten (10) years, we will have a shortfall of $15.321 million. As shown in the report, it is recommended to follow the developed strategy as follows:

- allocate an average of $1.3 million to roads yearly to attain the recommended level of service
- allocate $302,000 for bridges in the next five (5) years to maintain the recommended level of service
- allocate an average of $267,000 for storm drainage to maintain the recommended level of service
- allocate $61,500 for streetlights in the next four (4) years to maintain the level of service
- allocate $3.5 million for the future fire hall (buildings)
- allocate $5 million for building improvements over the next 10 years
- allocate $770,000 over the course of the next 10 years for land improvements to maintain the level of service
- allocate $4.2 million over the course of the next 10 years for vehicles and equipment to maintain the level of service
- allocate $71,750 for traffic signs over the course of the next 10 years to maintain the level of service
- allocate $50,000 for guiderails over the course of the next 10 years to maintain the level of service

Table 3 outlines the recommended allocation based on current budget allocations as well as the requirements to meet total needs as well as replacement over 10 years.

Asset	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Grand Total (10 Years)
Road	$ 4,964,163	$ 685,450	$ 817,268	$ 621,091	$ 885,022	$ 928,816	$ 2,214,589	$ 938,990	$ 541,318	$ 406,000	$ 13,002,709
Structure	$ 200,400	$ -	$ 24,000	$ 24,000	$ 30,000	$ 24,000	$ -	$ -	$ -	$ -	$ 302,400
Storm Drainage	$ 325,334	$ 291,088	$ 359,580	$ 308,211	$ 273,966	$ 222,597	$ 205,474	$ 205,474	$ 205,474	$ 205,474	$ 2,669,000
Street Lighting	$ 15,375	$ 15,375	$ 15,375	$ 15,375	$ -	$ -	$ -	$ -	$ -	$ -	$ 61,500
Building	$ 3,500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,500,000
Building Improvement	$ 1,758,956	$ 428,956	$ 428,956	$ 428,956	$ 428,956	$ 300,323	$ 300,323	$ 300,323	$ 300,323	$ 300,323	$ 4,976,394
Other Land Improvement	$ 364,362	$ 225,000	$ -	$ -	$ 25,000	$ -	$ 20,000	$ -	$ 135,702	$ -	$ 770,064
Vehicle	$ 140,000	$ 160,000	$ 750,000	$ -	$ 435,000	$ -	$ -	$ 815,000	$ 870,000	$ -	$ 3,170,000
Equipment	$ 270,000	$ 15,000	$ 13,000	$ 225,000	$ 173,891	$ -	$ 114,959	$ 177,000	$ 15,000	$ 5,500	$ 1,009,350
Sign	$ 5,300	$ -	$ -	$ -	$ -	$ 3,600	$ -	$ -	$ 36,000	$ 26,850	$ 71,750
Guiderail	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 50,000
TOTAL	**$ 11,548,890**	**$ 1,825,869**	**$ 2,413,179**	**$ 1,627,633**	**$ 2,256,835**	**$ 1,484,336**	**$ 2,860,346**	**$ 2,441,787**	**$ 2,108,817**	**$ 949,147**	**$ 29,583,166**
Projected Budget	$ 5,195,437	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 14,195,437
Shortfall	-$ 6,353,453	-$ 825,869	-$ 1,413,179	-$ 627,633	-$ 1,256,835	-$ 484,336	-$ 1,860,346	-$ 1,441,787	-$ 1,108,817	$ 50,853	-$ 15,387,729

Table 3: Recommended Capital Investments – 10 Year Period (2025-2034)

2. INTRODUCTION AND BACKGROUND

2.1 GOALS OF ASSET MANAGEMENT

The overall objectives of the plan are as follows:

- To provide a comprehensive reference for council, managers and staff for renewing, operating, maintaining, building, replacing and disposing of assets.
- To reflect the current and desired system conditions, levels of service and safety.
- To recommend optimal asset management and financial strategies.
- To set strategic priorities to optimize decisions.
- Maximize benefits, manage risks and provide satisfactory levels of service.

2.2 DEVELOPMENT OF THE AMP

The asset management plan was developed through consultations and the culmination of work completed by staff over the last few years. As staff became aware of the need to undertake a comprehensive approach to asset management planning, it engaged consultants to assist in collecting data, performing condition assessments, and developing this strategy.

2.3 AMP-RELATIONSHIP TO OTHER PLANS

An asset management plan is a key component of the Municipality's planning process linking with multiple other corporate plans and documents:

- **Official Plan** - The AMP should utilize and influence the land use policy directions for long-term growth and development as provided through the Official Plan.
- **Strategic Plan** – The strategic plan should guide the AMP in terms of service levels, policies, processes, and budgets defined in the AMP.
- **Long Term Financial Plan** - The AMP should both utilize and conversely influence the financial forecasts within the long-term financial plan. East Ferris does not currently have a long-term financial plan but has moved to longer-term capital planning.
- **Capital Budget** - The decision framework and infrastructure needs identified in the AMP form the basis on which future capital budgets are prepared.
- **By-Laws**, **standards**, **and policies** - The AMP will influence and utilize policies and by-laws related to infrastructure management practices and standards.
- **Regulations** - The AMP must recognize and conform to industry and other government regulations.

2.4 REFINEMENT OF THE AMP

The AMP is a living document that should be updated on a regular basis as new information becomes available and as East Ferris changes and grows. This plan provides a horizon on the life of the assets but focuses financially on the next 10 years. Ideally, the plan should be updated every 3-5 years once it is complete.

As well, as infrastructure is replaced, updates to the performance model should be undertaken regularly in order to ensure that the priorities reflect changing condition ratings as well as financial decisions.

2.5 CORPORATE ASSET MANAGEMENT POLICY

Through the development of this plan, all data, analysis, life cycle projections, and budget models were provided through various reports and with the knowledge of municipal staff. The plan will be synchronized, and therefore, will allow for ease of update and annual reporting of performance measures and overall results.

This will allow for continuous improvement of the plan and its projections. It is therefore recommended that the plan be revisited and updated every 3-5 years.

3. STATE OF INFRASTRUCTURE

3.1 INTRODUCTION

3.1.1 Objective

To identify the state of East Ferris' infrastructure today, identify priorities for the near and long term, and provide for a financing strategy based upon current funding sources as well as recommendations for change. The report is also intended to highlight the current levels of service and a plan to develop the desired levels of service based upon community needs.

3.1.2 Scope

Within this State of the Infrastructure and assets section, the following asset categories are included:

- Road network
- Structures (Bridges and Culverts)
- Buildings (Municipal Facilities, Public Works Garage and Emergency Services)

3.1.3 Approach

The report is based on the seven key questions of asset management as outlined within the National Guide for Sustainable Municipality Infrastructure:

- What does East Ferris own? (inventory)
- What is the replacement cost?
- What is the condition / remaining service life of the asset(s)?
- What needs to be done and when? (maintain, rehabilitate, replace)
- How much will it cost?
- What should be done in the future to improve asset management and ensure sustainability?

3.1.4 Data

The base data for the Municipality of East Ferris assets comes from various sources with the view to capture the most up-to-date information as follows:

- 2015 PSAB 3150 Tangible Capital Asset information
- 2025 Capital Replacement Planning Report for Facilities - MPAC
- 2022 Road Needs Study by WSP
- 2023 Culvert Evaluation Survey by McIntosh Perry
- 2024 Bridge Management Study from HP Engineering

3.2 ROADS

3.2.1 Road – Inventory – What does East Ferris own?

This section provides a review and analysis of the road system from a surface type environment. Road sections within road systems may be classified in a number of ways to illustrate their roadside environment, surface type, functional classification, and so forth. The classifications provide assistance in developing further information with respect to the road system, such as replacement costs and performance expectations.

On December 31st, 2023, the Municipality of East Ferris road network consisted of 107.8 kilometers of roadways: 20.5km are paved with asphalt, 51.1km are surface treated, and 36.2km are gravel.

3.2.1.1 Surface Types

Surface type criteria of a road section are useful in characterization of the road section, and in determining costs for replacement, reconstruction and rehabilitation treatments.

Surface Type	Roadside Environment			
	Hot Mix Asphalt (km)	Surface Treated (km)	Gravel (km)	Total (Centerline-km)
Kilometers	20.5	51.1	36.2	107.8
% of Total	19.1%	47.7%	33.5%	100%

Table 4: Surface Type Environment Distribution

3.2.2 Roads – Valuation/Replacement Costs – What is it worth?

The total historical cost for roads surface and base as of 2024 financial statements was combined with bridges and is as follows:

2024 Financial Statements			
Asset Type	**Acquisition Cost**	**Accumulated Depreciation**	**Net Book Value**
Roads and bridges	$18,278,868	$3,079,307	$5,749,275

Table 5: Roads & bridges Historical Cost – Roads – 2024 Financial Statements

The estimated replacement value of all municipal roads, in 2024 dollars, is shown in the table below:

Roadside Environment	Replacement Cost
Paved (HCB)	$16,607,418
Surface Treated (LCB)	$29,158,661
Gravel	$15,106,702
Total	**$ 60,872,782**

Table 6: Average Roads Replacement Costs by Road type

3.2.3 Roads – Asset condition and remaining service life

3.2.3.1 Asset Condition Rating Methodology

The provincial requirements for AMP's include asset condition assessment in accordance with standard engineering practices. The Municipality's evaluation system was based on visual pavement condition surveys for all gravel roads in accordance with current Ontario Ministry of Transportation (MTO) practices. A pavement condition index (PCI) was assigned to each gravel road roadway segment based on a riding condition rating (RCR) and type, severity, and extent of distress referred in the Distress Manifestation Index (DMI). The PCI for hot-mix-asphalt and surface treated roads were obtained by Local Authority Services (LAS) using their StreetScan digital scanning survey. Additional field data was obtained through a visual examination of the road system and included structural adequacy, level of service, maintenance demand, surface and shoulder width, surface condition, and drainage. This report is essentially a desktop analysis. As such, some data fields in the MTO Inventory Manual, such as substandard horizontal and vertical alignment, were not populated.

Evaluations of each road section were completed in accordance with the MTO standard. Data collected was entered directly into the Decision Optimization Technology (DOT) Road's software and the Road Needs Study was prepared by WSP Canada Inc. Condition ratings, time of need, priority ratings, and associated costs were then calculated. Unit costs for construction were provided by staff. This report is essentially a desktop analysis. As such, some data fields in the inventory manual, such as substandard horizontal and vertical alignment, were not populated.

The condition ratings, developed through the scoring in the inventory manual, classify roads as 'NOW', '1 to 5', or '6 to 10' year needs for reconstruction. The time of need is a prediction of the time until the road requires reconstruction, not the time frame until action is required. For example, a road may be categorized as a '6 to 10' year need with a resurfacing recommendation. This road should be resurfaced as soon as possible to further defer the need to reconstruct.

Recommendations are made based on the defects observed and other information available in the database at the time of preparation of the report. Once a road asset reaches the project level, the municipality may select another alternative based on additional information, asset management strategy, development considerations or available funding.

Time of Need	MTO PCI	Surface Condition	Description
NOW	1 to 50	Now Needs – Reconstruction or Major Rehabilitation	Poor to Very Poor to Failed
1 to 5	51 to 70	1 to 5 year needs more extensive rehabilitation	Fair / Passable
6 to 10	71 to 80	6 to 10 year Needs Resurfacing	Good
ADEQ	81 to 100	Adequate – Maintenance and Preservation	Satisfactory/ Good/ Excellent

Table 7: Evaluation method comparison

3.2.3.2 Road System Adequacy and Condition by Time of Need

The inventory manual methodology results in overall rating of road sections by time of need (TON); NOW, 1 to 5, 6 to 10, or Adeq (Adequate). Table 16 below provides a breakdown of the road system by time of need and roadside environment. In order to produce Table 15, we approximate the condition ratings to a time of need.

The system adequacy is a measure of the ratio of the 'NOW' needs to the total system and includes needs from the six critical areas described earlier in the report. The overall TON is the most severe or earliest identified need. For example, a road section may appear to be in good condition, but is identified as a NOW need for capacity, indicating that it requires additional lanes.

Equation 1: System Adequacy Calculation

$$\text{System Adequacy} = \frac{\text{Total System (km)} - \text{NOW Deficiencies (km)}}{\text{Total System (km)}} \times 100$$

The Municipality of East Ferris currently has a road system adequacy measure of **81.2%.**

The road system currently measures **107.8** centreline kilometres (considering boundary roads), with 20.3 kilometers rated as deficient in the 'NOW' time period.

Time of Need	Total (centerline-km)
Now	20.3
1-5	15.3
6-10	22.6
ADEQ	14.7
Gravel	35.1
Total	107.8

Table 8: Time of Need by roadside environment

All gravel roads are subject to a 5-year cycle maintenance plan. Such roads have a specific capital maintenance plan with a time of need of 1 to 5 years, separate from the hard top road program.

	Cost by Time of Need			
Asset Type	Current need	1 to 5 years	6 to 10 years	Totals 0-10 Years
Hard Top Roads	$4,875,069	$3,623,013	$3,876,485	$12,404,568
Gravel Roads	$ 89,094	$ 284,635	$ 224,412	$ 598,140
Grand Total	$4,964,163	$3,937,648	$4,100,897	$13,002,709

Table 9: Cost by Time of Need

The estimates provided in this report, Table 10, are in accordance with the estimated construction costs based on 2024 construction costs based on current value. Detailed estimates on a road-by-road basis will vary from these estimates as the detailed design will consider other road needs such as ditching, culvert, frost heaves and others.

Item	Unit	2024 Costs ($)
Excavation	m^3	21.00
Hot Mix Asphalt	t	225.00
Granular A	t	26.00
Granular B	t	30.00
Catch Basins - adjust	ea.	1000.00
Asphalt Pulverizing	m^2	3.00
Crack Sealing	m^2	1.25
Single Surface Treatment	m^2	5.25
Double Surface Treatment	m^2	10.00
Micro-resurfacing	m^2	6.25

Table 10: Unit Costs

Based on these former MTO targets, which were in effect when the municipality grant system was in place, the target adequacy for the county roads in Ontario should be 75%, as a minimum. The minimum target adequacies were established by MTO, to reflect the nature and purpose of the road system. It is also a good and recommended guideline for the Municipality of East Ferris.

3.2.3.3 Physical Condition

The physical condition of a road is also a factor in the decision matrix to prioritize roads. As traffic and use change from road to road, priority to higher traffic is often given when facing budget constraints. Based on this methodology, the municipality will continue to prioritize some roads such as arterial and collector roads to ensure their physical condition remains better than some other local roads. On that concept, there will continue to be some differences in the relationship between the average physical condition or certain roads and the system adequacy.

3.2.3.4 Good to Very Good Roads

One of the requirements of the annual Financial Information Return (FIR) reporting is the percentage of the roads that are good to very good. We use a calculation similar to the system adequacy calculation to determine the good to very good roads as follows:

Equation 2: Good to Very Good Equation

$$\text{Good to Very Good} = \frac{\text{Total System (km)} - (\text{NOW} + 1 \text{ to } 5 \text{ (km)})}{\text{Total System (km)}} \times 100$$

The percentage of good to very good roads in EF is **67.0%.**

3.2.3.5 Remaining Service Life

As indicated previously, the TON is really a prediction model in terms of an estimate based on current condition to the time for reconstruction. The TON also provides an estimate of the remaining life in the road system/section. The following figure summarizes the structural adequacy ratings of the road system and illustrates the estimated remaining service life of the road system.

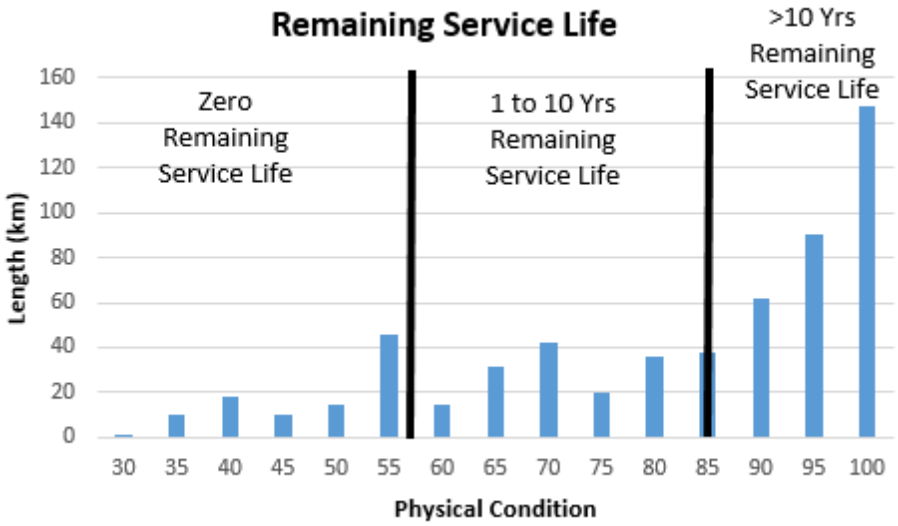

Figure 2: Remaining Service Life

3.3 STRUCTURE

3.3.1 Structure – Inventory – What Does East Ferris Own?

This section of the report addresses structure assets with a span of 3 meters or greater only. Although this section includes structures defined as bridges and larger culverts, since East Ferris' culverts are less than 3 metres in diameter, this section will cover municipal bridges only. The content will provide review and analysis of the structure inventory from several perspectives: condition rating, functional classification, roadside environment, and replacement cost. Information for this section of the report is drawn from the 2024 Bridge Management Report prepared by HP Engineering.

On December 31, 2024, the Municipality of East Ferris bridge network consisted of the following:

Type of Structure	Quantity	Total Span (m)	Deck Area (m2)
Bridges	2	29	208.6
Shared Bridge	1	7.4	35.15
Total	3	36.4	243.75

Table 11: Structure Summary table

Data from HP ENGINEERING 2024 Bridge Management Report

Note that the shared bridge is located on the boundary road shared with the Township of Chisholm, where capital construction costs are shared at 50/50.

3.3.2 Structure – Valuation/Replacement Costs – What is it worth?

Budget costs for the replacement of bridges are usually based on the deck surface area of individual structures (m2); therefore, benchmark replacement costs for this AMP were extracted from the 2022 HP Engineering Bride Management Study Report along with the Ontario Structure Inspection Manual (OSIM) inspection reports provided by the City of Ottawa for the boundary bridges. In the case of culvert type structures, the plan area (or deck surface area) used in the calculation was:

('length of spans' + 1 m) x ('width of roadway' + 1 m).

The total historical cost for structures as of 2024, similarly to the road surface and base, have been combined in the past and as of the 2024 financial statements, it remains as follows:

2024 Financial Statements			
Asset Type	**Acquisition Cost**	**Accumulated Depreciation**	**Net Book Value**
Roads and bridges	$18,278,868	$3,079,307	$5,749,275

Table 12: Roads & bridges Historical Cost – Roads – 2024 Financial Statements

The estimated replacement value of all municipal bridges and culverts, in 2024 dollars, is shown in the table below:

Type of Structure	Quantity	Replacement Cost
Bridges	2	$2,068,500
Bridges (Chisholm boundary)	1	$284,500
Total	109	$2,353,000

Table 13: Structure replacement costs

Note that the cost for the boundary structures with the Township of Chisholm has been reduced by 50% and that the above costs represent the Municipality of East Ferris replacement costs, based on design that would meet current standards.

The budget recommendations bear a direct relationship to the value of the structure inventory. It is estimated that the cost to replace the bridge and culvert inventory is **$2,353,000.** This estimate is based on the replacement costs from OSIM values for bridges and culverts. These benchmark costs can vary considerably once specific project requirements are realized.

3.3.3 Structure – Asset condition and remaining service life

3.3.3.1 Asset Condition Rating Methodology

The provincial requirements for AMP's include asset condition assessment in accordance with standard engineering practices. Provincial legislation requires that all structures with a span of 3 meters or greater be inspected under the supervision of a structural engineer every two years, in accordance with OSIM or equivalent. East Ferris reporting conforms to the OSIM format. Bridge and culvert structures are rated as deficient in the 'NOW', 1 to 5 year or 6 to 10 year timelines due to:

- Insufficient width of structure
- Structural Capacity
- Vertical clearance
- Safety Treatments
- Level of Service (cannot accommodate peak hour traffic/capacity)

The condition ratings, developed through the scoring in OSIM, classify structures as 'NOW', '1 to 5', or '6 to 10' year needs for reconstruction or rehabilitation. From an asset management perspective and similar to roads, structures with rehabilitation treatments offer the best return on investment, to further defer the need to reconstruct and maximize the value and life cycle of the asset. Safety defects are the priority.

Field data is obtained through a visual examination of each structure. Overall ratings and time of need are calculated based on the condition ratings and a combination of other calculations and data.

The asset management plan utilized condition data from the 2024 HP Engineering Report. For structure assets, data and structure condition ratings were completed in accordance with the most current version of the OSIM.

3.3.3.2 Structure Inventory Overall Condition

Relating the overall condition of the structure inventory is more complex than the road section as the bridge structure evaluations will produce a 'NOW' need for a structure due to the absence of end treatments at the corners of a structure, or the end of the guide rail on a culvert structure. To gain a sense of the condition of the overall bridge structures inventory, we used the Bridge Condition Index (BCI) information provided in the 2024 HP Engineering Report. The BCI is a measurement of the overall condition of the bridge. There are different accepted methods of calculating BCI. To be noted, the index does not indicate the safety of a bridge.

From the Ministry of Transportation of Ontario Website:

> *"A Bridge Condition Index (BCI) rating is a planning tool that helps the Ministry schedule maintenance and upkeep. The BCI is not used to rate or indicate the safety of a bridge. The result is organized into ranges from 0 to 100. Immediate action is taken to address any safety concerns.*
>
> ***Good - BCI Range 70 -100***
> *For a bridge with a BCI greater than 70, maintenance work is not usually required within the next 5 years.*
>
> ***Fair - BCI Range 60 -70***
> *For a bridge with a BCI between 60 and 70 the maintenance work is usually scheduled within the next five years. This is the ideal time to schedule major bridge repairs from an economic perspective.*
>
> ***Poor - BCI Less than 60***
> *For a bridge with a BCI rating of less than 60, maintenance work is usually scheduled within approximately one year."*

Asset Type	Poor	Fair	Good
East Ferris Bridges	1		1
Boundary Bridge		1	

Table 14: Bridges & Culverts Condition
(Data from HP Engineering Bridge Management Reports 2024)

3.3.3.3 Structure System Adequacy and Condition by Time of Need

Relating the overall condition of the structure inventory is more complex than the road section as the bridge structure evaluations will produce a 'NOW' need for a structure due to the absence of end treatments at the corners of a structure, or the end of the guide rail on a culvert structure. To gain a sense of the condition of the overall bridge structures inventory, the current estimated replacement cost has been compared to the estimated cost of the current needs that have been identified. The following equation describes the ratio of the replacement cost to the needs costs:

Equation3: Bridge Structure Replacement to Improvement Ratio

$$\text{Adequacy Index} = \frac{\text{Total Replacement Cost} - \text{Total Needs Cost}}{\text{Total Replacement Cost}} \times 100$$

Using Equation 3, the Adequacy Index for the East Ferris Bridge Structure Inventory is **88%** using a replacement as identified in the OSIM Report and the estimated improvement costs from the Bridge Management Study.

Applying the same calculation to the culvert structures inventory produces and Adequacy Index of **66%** using a replacement cost as identified in the OSIM Report and the standardized improvement costs from the Bridge Management Study.

The OSIM methodology results in overall rating of bridge and culvert structures by TON; NOW, 1 to 5, 6 to 10, or Adeq (Adequate). Table 15 provides a breakdown of the bridge inventory and culvert structure inventories system by TON.

Asset Type	Time of Need			
	< 1 year	1 to 5 years	6 to 10	Totals years Cost
Bridges	$67,900	$267,500	$0	$335,400

Table 15: Structures Needs, Cost by Time of Need
(Data from HP Engineering Bridge Management Report 2024)

3.3.3.4 Record of Assumption – TON, Improvement and Replacement Costs – Structures

The methodology of this report is such that the OSIM itself forms the basis of a large number of assumptions in terms of:

- Dimensional requirements for the development of improvement and replacement costs
- Structural requirements based on field ratings of elements
- Time of needs based on the ratings and subsequent calculations

3.3.3.5 Remaining Service Life

As indicated, the TON is really a prediction model in terms of an estimate based on current condition to the time for reconstruction for some elements. The TON then may also provide an estimate of the remaining life in the structure. The following figures summarize two different perspectives on bridge life expectancy – design life and service life. This difference has a significant impact on development of the financial plan. Whereas structures constructed prior to 2000 had a 50-year design life, they typically had a service life in the 75-year range.

Upon further engineering review, load rating capacity will be required within the next 10 years. Remaining Service Life speculation is shown in the table below.

Asset Type	Remaining Design Life (50 yr. Design Life)			
	Number of			
	Construction	Last Major Construction	Design Life	Total
Edmond Rd Baily Bridge	1984	1984	50	2034
Groulx Rd Concrete Bridge	1930	1984	50	2034
South Shore Wood Bridge	1910	2010	30	2040

Table 16: Remaining Design Life

Asset Type	Anticipated Remaining Service Life (75 yr. service Life)			
	Number of			
	Construction	Last Major Construction	Design Life	Total
Edmond Rd Baily Bridge	1984	1984	75	2059
Groulx Rd Concrete Bridge	1930	1984	75	2059
South Shore Wood Bridge	1910	2010	40	2050

Table 17: Anticipated Remaining Service Life (75 yr. Service life)

The condition reviews are just that, the physical condition of the structures. When other issues are considered, the time of need could change dramatically. On bridges and similar structures, appropriate hydraulic capacity may prioritize the time of need, or in some other examples, where a bridge was designed a single lane, and for safety reasons it must be increased in size to accommodate true 2-lane traffic. As per both tables above, these bridge structures are expected to last beyond the design life, but they may need to be replaced prior to the end of their service life, unless they remain in excellent condition which will be defined by their BCI.

3.4 STORM DRAINAGE

3.4.1 Storm Drainage – Inventory – What Does East Ferris Own?

This section of the report addresses storm drainage assets including all storm pipes crossing municipal roads (culverts) under a 3-meter span as well as storm sewer system. For this section, all driveway culverts are not accounted for as their maintenance and replacement fall under the municipal operating budget.

The content for this section will provide review and analysis of the storm drainage inventory from a number of perspectives including, but not limited to, condition rating, roadside environment, replacement cost for road culverts obtained in the 2023 Culvert Need Study prepared by McIntosh Perry Consulting Engineers. As for the storm sewer system, the assessment is based on good engineering practice using Design Service Life (DSL).

On December 31, 2024, the Municipality of East Ferris storm drainage network consisted of the following:

Type of Storm Drain	Quantity (each)	Total Length (m)
Storm Pipes (Culverts)	431	5,724
Storm Sewer	---	562
Total	---	6,286

Table 23: Storm Drainage Summary table

3.4.2 Storm Drainage – Valuation/Replacement Costs – What is it worth?

The Culvert Needs Study included replacement costs for all municipal assets for this category. The costs were verified and accurately represent the infrastructure value when the work is contracted out. It is noted that the identified replacement costs could see savings of up to 50% if the work was to be done in-house; however, for the purpose of the AMP, the contracted costs are being used.

There is no historical cost for this section; however, the estimated replacement value for assets within this category, in 2024 dollars, is shown in the table below:

Type of Storm Drain	Quantity	Replacement Cost
Storm Pipes (Culverts)	431 units	$7,379,948
Storm Sewer	562 m	$625,889
Total	6,286 m	$8,005,837

Table 24: Storm Drainage replacement costs

It is estimated that the cost to replace the storm pipes (road cross culverts) and the storm sewers inventory is **$8,005,837.** These benchmark costs can vary considerably once specific project requirements are realized, and depending on whether some of the work is done in-house using municipal resources. For the purpose of the AMP, all catch basins, manholes and headwalls owned by the municipality were included in the linear meter cost under the storm sewer pipes category.

An asset that was not accounted for and that may fall under this section in the future is municipal ditches. Since the majority of East Ferris' rural road network is composed of open ditches to control storm water conveyance in combination with all storm pipes (road cross culverts) and storm sewers, these assets are primordial as a whole.

Although the municipality maintains 107.8 kilometres of roads, ditches are not always present on both sides of the road. A fair assessment can be made with the assumption that approximately 10% of the road network only has ditches on one side of the road. This assumption represents that there are approximately 204.82 kilometres (107.8 km x 1.9) of ditches on municipal roads. Using a fair value of $12.00/m to construct such ditches, the unaccounted replacement value for East Ferris ditches would be $2,457,840. As this asset is not part of the AMP, it is simply identified but it is not included under this section.

3.4.3 Storm Drainage – Asset Condition and Remaining Service Life

3.4.3.1 Asset Condition Rating Methodology

The storm pipes were evaluated based on specific asset condition assessment in accordance with standard engineering practices. The storm pipes road cross culverts were individually rated as deficient in the 'NOW', nearing end of life in 1 to 2 years, fair in 3 to 5 years, good in 6 to 10 years based on:

- Material condition
- Capacity
- Shape
- Settlement
- Erosion

The condition ratings, developed through the evaluation for storm pipes, categorizes them as year of need to replace being End of Life as 'NOW', nearing end of life as '1 to 2', fair as '3 to 5', good as '6 to 10' and very good as 11+ years for reconstruction. Field data is obtained through a visual examination of each storm pipe. Overall ratings and TON are calculated based upon the condition ratings. The asset management plan utilized condition data from the 2023 McIntosh Perry Consulting Engineering Report. For storm sewer pipes, the evaluation was based on their remaining useful Life.

Rating Category	% of Estimated Life Remaining	Asset Condition Characteristics
Very Good	76% - 100%	"Fit for the Future" New or recently rehabilitated. Very low risk of failure.
Good	51% - 75%	"Adequate" Low risk of failure Some unplanned maintenance is required
Fair	26% - 50%	"Requires Attention" Some signs of deterioration Some failures occur. Rehabilitation possible
Nearing End of Life	1% - 25%	"At Risk" Failures will increasingly occur Maintenance costs will likely increase
End of Life	0%	"At Higher Risk" Failures will increasingly occur Maintenance costs will likely increase

Table 25: Storm Sewer Evaluation Table

3.4.3.2 Storm Drainage Inventory Overall Condition

Based on both evaluation methods for the storm pipes (road cross culverts) and the storm sewer system, the findings for the network overall condition are as follows:

Asset Type	End of Life	Nearing End of Life	Fair	Good	Very Good
Storm Pipe (Individual Culvert)	19	38	47	48	279
Storm Sewer (Linear Meter)	0	0	127.6 m	0	434.5 m

Table 26: Storm Drainage Condition

3.4.3.3 Storm Drainage Adequacy and Condition by Time of Need

Both storm drainage asset types were respectively evaluated based on pipe condition and sewer design life. The AMP addresses the replacement requirement for these assets based on the TON. Although some of the storm sewer assets are categorized as fair, they have projected remaining life of 25 years; therefore, the storm sewer time of need remains beyond the 10-year projection for the AMP. Table 27 provides a breakdown of the storm drainage inventory.

Asset Type	TON				
	Now	1 to 2 years	3 to 5	6 to 10	Total
TOTAL	**$325,334**	**$650,668**	**$804,774**	**$821,897**	**$2,602,673**
Storm Pipes (Road Culvert)	$325,334	$650,668	$804,774	$821,897	$2,602,673
Storm Sewer	----	----	----	----	----

Table 27: Storm Drainage Needs & Cost by Time of Need

3.4.3.4 Remaining Service Life

As indicated, the TON is really a prediction model in terms of an estimate based on current condition to the projected time where reconstruction will be required for storm pipes and based on the design life for the storm sewer. A 75-year service life was used for the storm sewer based on the fact that the sewer system is made of concrete pipe.

The condition reviews are the physical condition of the system. When other issues are considered, the time of need could change dramatically. On storm drainage, appropriate hydraulic capacity may prioritize the time of need; however, storm sewers should be replaced prior to the end of their service life unless they remain in excellent condition which will be defined by their detailed inspection such as CCTV.

3.5 STREET LIGHTING

3.5.1 Street Lighting – Inventory – What Does East Ferris Own?

This section of the report addresses street lighting assets only as the municipality currently does not have traffic

signals or flashing lights. Streetlights remain a key component of our transportation system.

Each year, the municipality completes a full inspection of all its street lighting and notes their conditions. The major change in street lighting in the last decade has been to replace the high-pressure sodium systems to LED. Table 28 summarizes East Ferris' street lighting assets.

Category and Location	Quantity
Streetlights	**99**

Table 28 – Streetlights Summary Table

3.5.2 Street Lighting – Valuation/Replacement Costs – What is it worth?

The estimated replacement value of all municipal traffic signals, streetlights and caution flashing lights in 2017 dollars, is shown in the table below:

Category and Location	Quantity	Replacement Cost
Streetlights	**96**	$354,900

Table 29 –Streetlights Replacement Cost Table

3.5.3 Street Lighting – Asset condition and remaining service life

All streetlights were assigned a life expectancy of 20 years. The high-pressure sodium lights have exceeded this life expectancy, and they are falling in poor condition. Some of the poles belong to other utility companies, like Hydro One or Bell, but the municipality does own at least 20 poles for its network. All LED installs were rated as good condition based on their remaining life expectancy.

Rating	Number of Signals
Good	58
Fair	0
Poor	41
Total	99

Table 30 – Streetlight condition rating

Table 31 was developed to reflect how streetlights are rated.

Rating Category	% of Estimated Life Remaining	Asset Condition Characteristics
Good	70% - 100%	"Adequate" Low risk of failure. Some unplanned maintenance is required.
Fair	35% - 69%	"Requires Attention" Some signs of deterioration. Some failures occur. Rehabilitation possible.
Poor	0% - 34%	"At Risk" Failures will increasingly occur Maintenance costs will likely increase

Table 31 –Streetlights condition rating explanation

The life expectancy of East Ferris' streetlighting assets is shown in Table 32.

Category and Location	Qty	Life Expectancy	Average Year of installation	Average Remaining Life	Rating
Streetlight (LED)	**58**	**20**	**2015**	**10**	**Good**
Streetlight	**41**	**20**	**2005**	**0**	**Poor**

Table 32 –Streetlights condition rating

The replacement needs for streetlight assets is to replace the 41 high-pressure sodium lights to LED. In some instances, the existing arms will be satisfactory, and in others they will need to be replaced. This is determined on a case-by-case basis. For the AMP, it is assumed that 10% of the remaining arms will require replacement; therefore, the total replacement cost is **$61,500** and it was decided to evenly distribute that cost over a four-year period.

As the network gets replaced, the municipality will continue to work with Hydro One to reflect further reductions in electricity operating costs as LED consumes less watts in comparison to the high-pressure sodium bulbs, and the consumption charges are based on a fixed price per unit.

3.6 BUILDING & LAND IMPROVEMENTS

3.6.1 Building & Land Improvements – Inventory – What Does East Ferris Own?

The Municipality owns and maintains facilities and land improvements. The building condition assessments for these buildings were undertaken by the Municipal Property Assessment Corporation (MPAC) in 2025, with supporting data provided by the municipality. These facilities and land improvements support administrative, operational, emergency, and community service functions while providing spaces for municipal staff and equipment, and support recreational, cultural, and other services for residents.

For the purpose of the AMP, the information provided remains a financial tool and it is important to understand that there are specific regulations in Ontario to guide the management of facilities, such as the Building Code (OBC), the Fire Protection and Prevention Act (FPPA), the Accessibility for Ontarians with Disabilities Act (AODA) and the Occupational Health and Safety Act (OHSA). Potential future needs, under these regulations, are not captured in the AMP and are viewed as project specific. The sand storage building is broken into two components as the fabric cover life expectancy differs from the building foundation. The following buildings were included in the building condition assessments:

Building Category	Building Description	Total # of Buildings	Year of Construction
Administrative		**11**	
	Municipal Office	1	2022
Public Works			
	Public Works Garage	1	2023
	Sand Storage Dome	.5	2016
	Stand Storage Dome - Fabric	.5	2016

Emergency Services			
	Corbeil Fire Hall	1	1967
	Astorville Fire Hall	1	1990
Community Services			
	Corbeil Park Hall	1	1990
	Corbeil Outdoor Shed	1	2014
	EFCC	1	1990
	Library	1	1999
Other Assets			
	OPP Training Center	1	1971
	Medical Center	1	2022

Table 33: Inventory of Buildings Assessed

3.6.2 Building & Land Improvement – Valuation/Replacement Costs – What is it worth?

East Ferris has a good understanding of its building and land improvement values and replacement cost. While MPAC provides additional information when it comes to older buildings, the municipality has most of the recent cost information and understands its building needs. Below is a summary of replacement costs by building assessed while providing projected replacement costs for the Corbeil Fire Hall.

Building Category	Building Description	Replacement cost
Administrative		**$ 37,133,640**
	Municipal Office	$ 5,601,044
Public Works		
	Public Works Garage	$ 2,500,000
	Sand Storage Build.	$ 300,000
	Stand Storage Fabric Cover	$ 150,000
Emergency Services		
	Corbeil Fire Hall	$ 3,500,000
	Astorville Fire Hall	$ 700,000
Community Services		
	Corbeil Park Hall	$ 1,400,000
	Corbeil Outdoor Shed	$ 40,000
	EFCC	$ 15,000,000
	Library	$ 2,000,000
Other Assets		
	OPP Training Center	$ 2,984,669.00
	Medical Center	$ 2,957,926.48

Table 34: Building Replacement Costs as of 2024

3.6.3 Building & Land Improvements – Asset Condition and Remaining Service Life

MPAC building assessment reviewed the building components on the following basis:

Good Condition (Low Priority): *The building component is in adequate condition, and no work is foreseen in the next 5 years.*

Fair Condition (Medium Priority): *The building component is in deteriorating condition but is still operational. Replacement/repair is expected in 3 to 5 years.*

Poor Condition (Medium Priority): *The building component will require replacement or major repair within the next 1 to 3 years.*

Critical Condition (High Priority): *The building component is past the point of economic repair or is not functioning and should be replaced or repaired within the year.*

For the purpose of the AMP, it was decided to compare the age of the asset against its expected life and assign a condition based upon the percentage of useful life remaining. The following table was developed to reflect the method.

Rating Category	% of Estimated Life Remaining	Asset Condition Characteristics
Very Good	76% - 100%	"Fit for the Future" New or recently rehabilitated. Very low risk of failure.
Good	51% - 75%	"Adequate" Low risk of failure Some unplanned maintenance is required
Fair	26% - 50%	"Requires Attention" Some signs of deterioration Some failures occur. Rehabilitation possible
Nearing End of Life	1% - 25%	"At Risk" Failures will increasingly occur Maintenance costs will likely increase
End of Life	0%	"At Higher Risk" Failures will increasingly occur Maintenance costs will likely increase

Table 35: Building Rating Categories

Table 36 summarizes the conditon of East Ferris' buildings.

Building Category	Building Description	Overall % of Estimated Life Remaining	Rating
Administrative			
	Municipal Office	94%	Very Good
Public Works			

	Public Works Garage	96%	Very Good
	Sand Storage Build.	82%	Very Good
	Stand Storage Fabric Cover	55%	Good
Emergency Services			
	Corbeil Fire Hall	0%	End of Life
	Astorville Fire Hall	30%	Fair
Community Services			
	Corbeil Park Hall	30%	Fair
	Corbeil Outdoor Shed	56%	Good
	EFCC	53%	Good
	Library	48%	Fair
Other Assets			
	OPP Training Center	28%	Fair
	Medical Center	94%	Very Good

Table 36: Building Condition Rating

3.6.3.1 Building & Land Improvements – By Time of Need

The building condition assessment provides detailed recommendations. The table below shows the required investments by building type based upon time of need.

Building Category	Current Need	1-5 years	6-10 years	Over 10 Years	Total Needs for 20 years
Municipal Office	---	$10,000	$20,000	$45,000	$75,000
Public Works Garage	---	$10,000	$20,000	$45,000	$75,000
Sand Storage Build.	---	---	---	$25,000	$25,000
Stand Fabric Cover	---	---	---	$150,000	$150,000
Corbeil Fire Hall	---	$25,000	$20,000	$45,000	$90,000
Astorville Fire Hall		$25,445	$42,621	$192,350	$260,416
Corbeil Park Hall	$10,000	$19,004	$75,063	$283,555	$387,622
Corbeil Outdoor Shed	---	$2,500	$500	$2,000	$5,000
EFCC	$1,250,000	$1,823,045	$938,452	$2,177,105	$6,188,602
Library	---	$191,794	$71,565	$280,057	$543,416
OPP Training Center	$70,000	$27,990	$293,415	$882,314	$1,273,719
Medical Center	---	$10,000	$20,000	$45,000	$75,000
Grand Total	**$1,330,000**	**$2,144,778**	**$1,501,616**	**$4,172,381**	**$9,148,775**

Table 37: Building improvements based upon time of need

The building improvements identified above are included in the overall 10-year AMP table where the 1-5 years

and 6-10 years investments were averaged over the years in addition to the current need.

3.7 OTHER LAND IMPROVEMENTS

3.7.1 Other Land Improvements – Inventory – What Does East Ferris Own?

This section of the report includes any land improvements that were not included in the "Building and Land Improvements" section above. The land improvements were not part of the MPAC Assessments Report; however, they still need to be considered in the asset management plan and are incorporated in the next table of this section.

3.7.2 Other Land Improvement – Valuation/Replacement Costs – What is it worth?

A summary of what we own and their replacement costs by land improvements was prepared by East Ferris staff and provided with estimated replacement costs in Table 38.

Category	Land Improvements & Location	Replacement Costs
Administration		
	Municipal Office Flagpole	$6,129
Public Works Garage		
	Septic Bed	$30,000
	Parking	$25,000
Emergency Services		
	Astorville Septic Tank	$10,000
	Astorville Parking	$20,000
	South Shore Dry Hydrant	$10,000
	Government Dock Dry Hydrant	$10,000
Community Services		
	Corbeil Park Hall Septic Bed	$100,000
	Corbeil Park Hall Parking	$100,000
	Outdoor Rink	$255,747
	Soccer Field	$69,477
	Tennis Courts	$248,900
	Pickle Ball Courts	$139,322
	Playground	$132,500
	Volleyball Courts	$50,000
	Gazebo/Tables/Bike Racks	$25,000
	Bleachers	$20,000
	EFCC Septic Bed	$125,000
	EFCC Parking	$225,000
	EFCC Flagpole	$4,086

	EFCC Garbage Bins	$9,557
	Astorville Tennis Court	$125,000
	Library Septic Bed	$35,000
	Cenotaph Flagpole	$4,086
	Cenotaph Parking Lot	$5,000
	MacPherson Parking Lot	$5,701
	MacPherson Boat Ramp	$100,000
	Big Moose Boat Ramp	$21,116
	Big Moose Dock	$22,681
	Big Moose Floating Dock	$10,328
	Big Moose Gazebo/Table/Bike	$25,000
	South Shore Boat Ramp	$109,200
	South Shore Replacement Dock	$7,381
Other Assets		
	Welcome Signs	$45,045
	Speed Signs	$25,000
	Medical Building Parking	$35,000
	Medical Building Septic Bed	$125,000
	OPP Septic	$50,000
	OPP Parking Lot	$175,000
Grand Total		**$2,541,256**

Table 38: Other Land Improvements Replacement Costs at 2024

3.7.3 Other Land Improvements – Asset Condition and Remaining Service Life

While direct measurements of asset conditions are necessary for implementing asset management strategies, the use of asset age enables comparison when we do not have detailed condition information available. For the purpose of this section, the method of evaluating asset conditions will be based on age. It was decided that we would compare the age of the asset against its expected life and assign a condition based upon the percentage of useful life remaining. The following table was developed to reflect the method.

Rating Category	% of Estimated Life Remaining	Asset Condition Characteristics
Very Good	76% - 100%	"Fit for the Future" New or recently rehabilitated. Very low risk of failure.
Good	51% - 75%	"Adequate" Low risk of failure Some unplanned maintenance is required
Fair	26% - 50%	"Requires Attention" Some signs of deterioration Some failures occur. Rehabilitation possible

Nearing End of Life	1% - 25%	"At Risk" Failures will increasingly occur Maintenance costs will likely increase
End of Life	0%	"At Higher Risk" Failures will increasingly occur Maintenance costs will likely increase

Table 39: Other Land Improvements Condition Rating Explanation

Table 40 summarizes the conditon of East Ferris' land improvements.

Category	Land Improvements	Overall % of	
Administration			
	Municipal Office Flagpole	90%	Very Good
	AVERAGE	**90%**	**Very Good**
Public Works Garage			
	Septic Bed	96%	Very Good
	Parking	87%	Very Good
	AVERAGE	**91%**	**Very Good**
Emergency Services			
	Astorville Septic Tank	30%	Fair
	Astorville Parking	Over	End of Life
	South Shore Dry Hydrant	93%	Very Good
	Government Dock Dry	93%	Very Good
	AVERAGE	**72%**	**Good**
Community Services			
	Corbeil Park Hall Septic	16%	Nearing End of Life
	Corbeil Park Hall Parking	Over	End of Life
	Outdoor Rink	90%	Very Good
	Soccer Field	Over	End of Life
	Tennis Courts	85%	Very Good
	Pickle Ball Courts	85%	Very Good
	Playground	93%	Very Good
	Volleyball Courts	85%	Very Good
	Gazebo/Tables/Bike	Over	End of Life
	Bleachers	40%	Fair
	EFCC Septic Bed	72%	Good
	EFCC Parking	7%	Nearing End of Life
	EFCC Flagpole	75%	Good
	EFCC Garbage Bins	0%	Nearing End of Life
	Astorville Tennis Court	65%	Good
	Library Septic Bed	48%	Fair
	Cenotaph Flagpole	75%	Good
	Cenotaph Parking Lot	53%	Good
	MacPherson Parking Lot	53%	Good
	MacPherson Boat Ramp	0%	Nearing End of Life
	Big Moose Boat Ramp	72%	Good
	Big Moose Dock	55%	Good
	Big Moose Floating Dock	Over	End of Life
	Big Moose	20%	Nearing End of Life
	South Shore Boat Ramp	92%	Very Good
	South Shore Replacement Dock	65%	Good
	AVERAGE	**57%**	**Good**

Other Assets			
	Welcome Signs	65%	Good
	Speed Signs	80%	Very Good
	Medical Building Parking	Over	End of Life
	Medical Building Septic Bed	80%	Very Good
	OPP Septic	87%	Very Good
	OPP Parking Lot	87%	Very Good
	AVERAGE	**80%**	**Very Good**

Table 40: Other Land Improvements Condition Rating

3.8 VEHICLES AND EQUIPMENT

3.8.1 Vehicles and Equipment – Inventory – What Does East Ferris Own? Replacement Cost?

This section of the report addresses vehicles and equipment assets having a purchase value of more than ten thousand dollars ($10,000) owned by the municipality. Information on vehicles and equipment was prepared by Municipal Staff.

The Municipality of East Ferris has many vehicles with replacement costs that staff estimated to total $4,165,000. Table 41 summarizes vehicle assets and replacement costs.

Vehicle Category	Vehicle Description	Quantity	Unit Cost
Public Works			
R01	**Pick-up Truck**	1	$ 85,000
R13	**Pick-up Truck**	1	$ 75,000
R02	**Tandem Plow**	1	$ 435,000
R03	**Tandem Plow**	1	$ 435,000
R04	**Tandem Plow**	1	$ 435,000
	Average		
Emergency Services			
F105	**Pumper Single**	1	$ 750,000
F106	**Dodge Rescue**	1	$ 300,000
F107	**Dodge Pickup**	1	$ 95,000
F108	**Crusader**	1	$ 600,000
F109	**Rescue Dodge**	1	$ 75,000
F111	**Pumper Single**	1	$ 750,000
	Average		
Park & Rec.			
P01	**Pick-up Truck**	1	$ 65,000
P02	**Pick-up Truck**	1	$ 65,000
	Average		
Grand Total		13	**$ 4,165,000**

Table 41: Inventory of Vehicles & Replacement Costs

Additionally, the Municipality of East Ferris has many pieces of equipment with replacement costs that are estimated to total $605,096. Table 42 summarizes equipment assets and replacement costs.

Equipment Category	Equipment Description	Quantity	Unit Cost
Public Works			
R05	**Loader**	1	$ 275,000
R06	**Grader**	1	$ 650,000
R12	**Backhoe**	1	$ 205,000
R16	**Excavator c/w attachment**	1	$ 225,000
	Pickup Plow Kit	1	$ 5,500
	Pickup 'V' Plow Kit	1	$ 12,500
	Pickup Dump Box	1	$ 7,000
	Plow Rear Back Blade	1	$ 18,000
	Plow Rear Back Blade	1	$ 18,000
	20-ton float	1	$ 35,000
	Trailers	3	$ 15,000
	Thompson Steam Jenny	1	$ 20,000
	Tailgate Spreader	1	$ 25,000
	Roller Packer Attach.	1	$ 28,000
	Eddynet Sweeper	1	$ 30,000
	Pavement Edger	1	$ 5,500
	Pusher Blade Backhoe	1	$ 7,500
	Garage Tools	1	$ 115,000
	Survey Equipment	1	$ 15,000
	Digital Signs	1	$ 30,000
	Office Furniture	1	$ 35,000
	Communication Radios	1	$ 15,000
	Small Tools - Chainsaws	1	$ 25,000
	Average		
Landfill Site			
R15	**Dozer**	1	$ 200,000
	Average		
Emergency Services			
	General	1	$ 523,266
	Computer Hard/Soft	1	$ 14,478
	Average		
Park & Rec.			
	Zamboni	1	$ 150,000
	Zero Turn	1	$ 15,000
	Zero Turn	1	$ 15,000
	Zero Turn	1	$ 15,000
	Ice Edger	1	$ 3,000
	Utility Trailer	1	$ 12,000
	Equipment Trailer	1	$ 12,000
	Snowblowers	2	$ 5,000
	Floor Machine	1	$ 8,000
	Small Tools - Chainsaws	1	$ 15,000
	EFCC Office Equipment	1	$ 173,891
	Average		
Administration			
	General	1	$ 86,246
	Computer Hard/Soft	1	$ 94,959
	Average		
Grand Total		42	**$ 605,096**

Table 42: Inventory Equipment & Replacement Costs

3.8.2 Vehicles and Equipment – Asset Condition and Remaining Service Life

While direct measurements of asset conditions are necessary for implementing asset management strategies, the use of asset age enables comparison when we do not have detailed condition information available. For the purpose of this section, the method of evaluating asset conditions will be based upon age. It was decided that we would compare the age of the asset against its expected life and assign a condition based upon the percentage of useful life remaining. The following table was developed to reflect the method.

Rating Category	% of Estimated Life Remaining	Asset Condition Characteristics
Very Good	76% - 100%	"Fit for the Future" New or recently rehabilitated. Very low risk of failure.
Good	51% - 75%	"Adequate" Low risk of failure Some unplanned maintenance is required
Fair	26% - 50%	"Requires Attention" Some signs of deterioration Some failure occurs. Rehabilitation possible
Nearing End of Life	0% - 25%	"At Risk" Failures will increasingly occur Maintenance costs will likely increase

Table 43: Vehicle and equipment Condition Rating Explanation

Table 44 summarizes the conditon of East Ferris' vehicle assets.

Vehicle Category	Vehicle Description	Qty	Life Expect.	Average Year	Remaining Life	% of Life	Rating
Public Works							
R01	**Pick-up Truck**	1	7	2019	1	14%	Nearing End of Life
R13	**Pick-up Truck**	1	7	2017	0	0%	End of Life
R02	**Tandem Plow Truck**	1	10	2019	4	40%	Fair
R03	**Tandem Plow Truck**	1	10	2023	8	80%	Very Good
R04	**Tandem Plow Truck**	1	10	2023	8	80%	Very Good
	Average					**43%**	**Fair**
Emergency Services							
F105	**Pumper Single Axle**	1	20	2012	7	35%	Fair
F106	**Dodge Rescue Van**	1	20	2016	11	55%	Good
F107	**Dodge Pickup 2500**	1	20	2018	13	65%	Good
F108	**Crusader Tanker**	1	20	2016	11	55%	Good
F109	**Rescue Dodge Pickup**	1	10	2016	1	10%	Nearing End of Life
F111	**Pumper Single Axle**	1	20	2007	2	10%	Nearing End of Life
	Average					**38%**	**Fair**
Park & Rec.							
P01	**Pick-up Truck**	1	10	2022	7	70%	Good
P02	**Pick-up Truck**	1	10	2014	0	0%	End of Life
	Average					**35%**	**Fair**
Grand Total		13					

Table 44: Vehicle Condition Rating

Table 45 summarizes the conditon of East Ferris' equipment assets.

Equipment Category	Equipment Description	Quantity	Life Expectancy	Average Year	Remaining Life	% of Remaining	Rating
Public Works							
R05	**Loader**	1	15	2021	11	73%	Good
R06	**Grader**	1	25	2017	17	68%	Good
R12	**Backhoe**	1	15	2022	12	80%	Very
R16	**Excavator c/w**	1	20	2008	3	15%	Nearing
	Pickup Plow Kit	1	15	2019	9	60%	Good
	Pickup 'V' Plow Kit	1	15	2021	11	73%	Good
	Pickup Dump Box	1	15	2021	11	73%	Good
	Plow Rear Back	1	15	2023	13	87%	Very
	Plow Rear Back	1	15	2023	13	87%	Very
	20-ton float	1	25	2011	11	44%	Fair
	Trailers	3	15	2020	10	67%	Good
	Thompson Steam	1	15	2016	6	40%	Fair
	Tailgate Spreader	1	25	1995	0	0%	End of
	Roller Packer	1	25	2018	18	72%	Good
	Eddynet Sweeper	1	25	2023	23	92%	Very
	Pavement Edger	1	25	2023	23	92%	Very
	Pusher Blade	1	25	2021	21	84%	Very
	Garage Tools	1	25	2023	23	92%	Very
	Survey Equipment	1	25	2023	23	92%	Very
	Digital Signs	1	25	2023	23	92%	Very
	Office Furniture	1	20	2023	18	90%	Very
	Communication	1	10	2023	8	80%	Very
	Small Tools -	1	25	2023	23	92%	Very
	Average					**72%**	**Good**
Landfill Site							
R15	**Dozer**	1	15	1999	0	0%	End of
	Average					**0%**	**End of**
Emergency Services							
	General	1				33%	Fair
	Computer	1				36%	Fair
	Average					**33%**	**Fair**
Park & Rec.							
	Zamboni	1	10	2022	7	70%	Good
	Zero Turn	1	10	2016	1	10%	Nearing
	Zero Turn	1	10	2013	0	0%	End of
	Zero Turn	1	10	2006	0	0%	End of
	Ice Edger	1	10	2015	0	0%	End of
	Utility Trailer	1	10	2014	0	0%	End of
	Equipment Trailer	1	10	2022	7	70%	Good
	Snowblowers	2	10	2017	2	20%	Nearing
	Floor Machine	1	10	2017	2	20%	Nearing
	Small Tools -	1	10	2022	7	70%	Good
	EFCC Office	1	7	2022	4	57%	Good
	Average					**21%**	**Nearing**
Administration							
	General	1				28%	Fair
	Computer	1	10	2021	6	60%	Good
	Average					**28%**	**Fair**
Grand Total		42					

Table 45: Equipment Condition Rating

3.9 SIGNS

3.9.1 Signs – Inventory – What Does East Ferris Own? Replacement Cost?

Although individual sign values remain below the ten-thousand-dollar value when it comes to replacement, these assets are now subject to annual inspection under the Ontario Minimum Maintenance Standards where the retroreflectivity is measured and reported. Signs that have a low retroreflectifity value are to be replaced. The municipality currently has 514 signs installed as well as 6 digital signs.

The sign inventory is subject to increase with time; in most cases this takes place when warning signs are added to curves or hill sections of rural roads currently not posted.

The replacement cost for each sign averages $50.00 for regulatory and warning signs, $75.00 for street name signs, and $6,000 for digital signs. Digital signs are subject to repairs including battery replacement every 4-5 years.

The total replacement cost for these assets is $71,750.

3.9.2 Sign – Asset Condition and Remaining Service Life

The Municipality has scheduled to replace all signs that failed inspection in 2025. The last inspection identified 72 signs that passed inspection but are likely due to be replaced by 2030.

The overall condition of all municipal signs remains good although warning and street signs were rated as fair.

3.10 GUIDERAILS

3.10.1 Guiderails – Inventory – What Does East Ferris Own? Replacement Cost?

There are two (2) main road guiderail types in East Ferris - standard cable guiderails and ‘W’ beam guiderails. All guiderails that are part of bridge structures are evaluated with the bridge asset as they are part of the bridge structure elements; therefore, they are not quantified in this section.

The municipality of East Ferris owns 2,315.5 meters of guiderails with a replacement cost of $392,338. Guiderails are devices designed to direct vehicles and/or traffic along the roadway and are mostly installed on curved sections or sections of the road that have non-recoverable slopes.

The total replacement cost for these assets is $71,750.

3.10.2 Guiderail – Asset Condition and Remaining Service Life

Historically, the municipality has scheduled full guiderail replacement to coincide with capital road reconstruction projects.

The overall condition of guiderails ranges from good to fair.

4. DESIRED LEVEL OF SERVICE

In order to determine the "right" level of funding and what taxpayers can afford to pay for, the municipality needs to establish levels of service. Some key factors to consider include: community expectations; legislative requirements, such as bridge studies; expected asset performance; long-term goals; and financial viability.

Currently, the municipality does not have an established system for collecting data regarding levels of services beyond physical conditions. Some goals that can be associated with levels of services are listed in Table 46.

Objective	Scope
Affordability	Costs are minimized and distributed such that access to service does not cause undue hardship to customers and businesses.
Accommodating growth	Development is not hampered by the availability of capacity.
Adequacy	Services are delivered to acceptable quality and quantity.
Reliability	Service is reliable with minimal interruption.
Safety	Meet safety requirements, as regulated by legislation.
Compliance	Assure environmental compliance, as regulated by legislation and/or operating licenses or agreements.
User services	Users' issues are captured and acted upon in an efficient and timely manner.

Table 46: Goals for level of service

Traditional views of performance management focused on collecting data about physical conditions of facilities and developing an engineering rehabilitation and/or maintenance plan (what to fix, what to replace). However, the performance of assets (facilities) is not limited to their physical or engineering conditions only. Equally important is the level of service (LOS) of the facility. In other words, how adequate are the facility conditions and operational status in meeting its intended functions?

Understanding the balance between physical and service conditions is crucial for the success of facility operations. Both are essential to manage and promote the socio-economic activities of the users. At the same time, they both are needed to protect public health and safety.

There is, however, little agreement about the definition or elements of LOS. This stems from the discrepancy between expected LOS and actual LOS; user desired LOS versus the needs to minimize the life cycle costs of assets and their impact on the environment; and visual perception of service quality versus and the actual/underlying status of the asset itself.

There are several factors that influence LOS. It is important to understand/track these factors to ensure that the system is proactive. Table 47 summarizes LOS factors.

Factor	Impact
Climate Change	Examples include: 1) extended winter months and more severe temperatures. 2) severe rainfall events and their associated impact on the effectiveness of the Storm water system; and 3) flooding of roads and challenges in meeting winter control requirements
Social Trends	Societal influences will continue to shape the municipality's strategy and priorities. Examples of such expectations include aspects like enhanced environmental stewardship and more cost-effective delivery of services.
Aging Infrastructure	The municipality has some infrastructure that is in better condition than other Ontario municipalities. This provides an opportunity for our municipality to focus on other parts of the network that continue to deteriorate and will require increasing levels of funding to ensure that they continue to offer safe and reliable services.
Growth Forecasts	According to analysis of the latest data, the municipality continues to experience population growth. It is anticipated that the trend will continue to growth in the next decade. Uncertainty is not entirely within the municipality's control and will continue to impact several financial and operational performance indicators.
Funding Mechanisms	Traditionally, the municipality has relied heavily on funding and tax levies. Changes in grant programs make it difficult to maintain service, forcing it to juggle priorities, and target where and how it invests. Continued vigilance in asset management has allowed the municipality to extend asset life and reduce the total cost of ownership. However, current spending is insufficient to maintain service at current levels over the long-term.

Table 47: Level of service factors

Multiple service measures may be required to adequately relate the condition of an asset to the various user groups: condition, operating costs, and end user. The following sections identify various measurements of level of service for the municipal assets.

4.1 ROADS - DESIRED LEVEL OF SERVICE

The proposed LOS is an established target set to guide the municipality in their current and future asset management. Proposed LOS are a requirement for compliance with O. Reg. 588/17. The proposed LOS established within this report relates to the target to be achieved within 10 years (2034).

4.1.1 Desired Level of Service for Roads

The desired level of service as well as the current and expected performance over the next ten years are provided in Table 48.

MUNICIPAL ASSET	CURRENT PERFORMANCE	DESIRED LEVEL OF SERVICE	EXPECTED PERFORMANCE OVER THE NEXT 10 YEARS
Collector / Arterial Roads	Average physical condition of road system is 69	Average physical condition of road system is 75	Target achieved by 2034
Local Hard Top Roads	Average physical condition of road system is 59	Average physical condition of road system is 70	Target achieved by 2034
Gravel Roads	Average physical condition of road system is 60	Average physical condition of road system is 65	Target achieved by 2034

Table 48: Desired Level of Service for Roads

4.2 STRUCTURES DESIRED LEVEL OF SERVICE

The calculated Bridge Condition Index (BCI) will be used in this section to determine the level of service. This takes into consideration all bridge elements, their individual condition, and projects the residual current value, at the time of the OSIM inspection, in comparison to the replacement cost. Overtime, the elements will deteriorate, and the BCI will reduce. However, by investing in repairing and/or replacing certain elements, while the remaining bridge life expectancy still warrants it, will increase the condition of the rehabilitated elements, thus increasing the BCI, and the LOS. The following sections identify various measurements of service of the structures inventory.

4.2.1 Desired Level of Service for Structures

The desired levels of service as well as the current and expected performance over the next ten years are provided in Table 49.

MUNICIPALITY ASSET	CURRENT PERFORMANCE	DESIRED LEVEL OF SERVICE	EXPECTED PERFORMANCE OVER THE NEXT 10 YEARS
Bridges	Bridges are rated as Good to Poor	Municipality Bridges are rated as Fair	Maintain current level of service

Table 49: Desired Level of Service Structures

4.3 STORM DRAINAGE DESIRED LEVEL OF SERVICE

Multiple service measures may be required to adequately relate to the condition of underground assets. There are two separate categories under this section. The storm pipe is based on detailed condition assessment, where the storm sewer has a linear rating based on design life. The following sections identify various measurements of service of the structures inventory.

4.3.1 Desired Level of Service for Storm Drainage

The desired level of service as well as the current and expected performance over the next ten years are provided in Table 50.

MUNICIPAL ASSET	CURRENT PERFORMANCE	DESIRED LEVEL OF SERVICE	EXPECTED PERFORMANCE OVER THE NEXT 10 YEARS
Storm Pipe (Culvert)	Storm Pipes are rated as End of Life to Very Good	Storm Pipes should be rated as Fair to Very Good	Target achieved by 2034
Storm Sewer	Storm Sewers are rated as Fair to Very Good	Storm Sewers should be rated as Fair to Good	Anticipate dropping the current level of service

Table 50: Desired Level of Service Storm Drainage

In addition to the above, the municipality recognizes that flooding may negatively impact the LOS. Under these circumstances, the municipality will continue to implement feasible local improvements to improve network reliability; however, that is not captured in the above LOS table.

4.4 STREET LIGHTING DESIRED LEVEL OF SERVICE

For streetlights, a linear rating based on design life is utilized. The desired level of service as well as the current and expected performance over the next ten years are provided in Table 51.

MUNICIPAL ASSET	CURRENT PERFORMANCE	DESIRED LEVEL OF SERVICE	EXPECTED PERFORMANCE OVER THE NEXT 10 YEARS
Street Lighting	58% of streetlights are rated as Fair	The average rating of streetlights shall be rated as Good	Maintain current level of service

Table 51: Desired Level of Service Street Lighting

4.5 BUILDING AND LAND IMPROVEMENTS DESIRED LEVEL OF SERVICE

4.5.1 Desired Level of Service for Buildings and Land Improvements

The desired level of service as well as the current and expected performance over the next ten years are provided in Table 52.

MUNICIPAL ASSET	CURRENT PERFORMANCE	DESIRED LEVEL OF SERVICE	EXPECTED PERFORMANCE OVER THE NEXT 10 YEARS
Administration	Overall average condition is rated as Very Good	Overall average condition should be maintained as Very Good	Maintain current level of service
Public Works	Overall average condition is rated as Very Good	Overall average condition should be maintained as Very Good	Maintain current level of service
Emergency Services	Overall average condition is rated as Nearing End of Life	Overall average condition should be maintained as Good	Improve current level of service
Community Services	Overall average condition is rated as Fair	Overall average condition should be maintained as Good	Improve current level of service
Other Assets	Overall average condition is rated as Good	Overall average condition should be maintained as Good	Maintain current level of service

Table 52: Desired Level of Service Buildings and Land Improvements

4.6 OTHER LAND IMPROVEMENTS DESIRED LEVEL OF SERVICE

The desired level of service as well as the current and expected performance over the next ten years are provided in Table 53.

MUNICIPAL ASSET	CURRENT PERFORMANCE	DESIRED LEVEL OF SERVICE	EXPECTED PERFORMANCE OVER THE NEXT 10 YEARS
Administration	Overall average condition is rated as Very Good	Overall average condition should be maintained as Very Good	Maintain current level of service
Public Works	Overall average condition is rated as Very Good	Overall average condition should be maintained as Very Good	Maintain current level of service
Emergency Services	Overall average condition is rated as Good	Overall average condition should be maintained as Good	Maintain current level of service
Community Services	Overall average condition is rated as Good	Overall average condition should be maintained as Good	Maintain current level of service
Other Assets	Overall average condition is rated as Very Good	Overall average condition should be maintained as Very Good	Maintain current level of service

Table 53: Desired Level of Service Other Land Improvements

The above table represents the average of other land improvements within each municipal asset category or department. It is important that individual assets may be better or worse than the average. The municipality will consider the worst individual assets to be replaced and/or improved as good management and regulations requires.

4.7 VEHICLES AND EQUIPMENT DESIRED LEVEL OF SERVICE

The desired level of service as well as the current and expected performance over the next ten years for vehicles and equipment are provided in Table 54 and Table 55, respectively.

Public Works Vehicles	Overall average condition is rated as Fair	Overall average condition should be maintained at Fair or better	Maintain current level of service
Emergency Services Vehicles	Overall average condition is rated as Fair	Overall average condition should be maintained at Fair or better	Maintain current level of service
Park & Rec. Services Vehicles	Overall average condition is rated as Fair	Overall average condition should be maintained at Fair or better	Maintain current level of service

Table 54: Desired Level of Service for Vehicles

Public Works Equipment	Overall average condition is rated as Good	Overall average condition should be maintained at Fair or better	Maintain current level of service
Landfill Site	Overall average condition is rated as End of Life	Overall average condition should be maintained at Fair or better	Maintain or improve current level of service
Emergency Services Vehicles Equipment	Overall average condition is rated as Fair	Overall average condition should be maintained at Fair or better	Maintain or improve current level of service
Park & Rec. Services Equipment	Overall average condition is rated as Nearing End of Life	Overall average condition should be maintained at Fair or better	Maintain or improve current level of service
Administration (Information Technology Equipment	Overall average condition is rated as Fair	Overall average condition should be maintained at Fair or better	Maintain current level of service

Table 55: Desired Level of Service for Equipment

4.8 SIGNS DESIRED LEVEL OF SERVICE

The desired level of service for signs is driven by the Minimum Maintenance Standards (MMS) regulation. Signs identified in the MMS are to remain in good to fair condition and must be replaced when they fail. The street signs, as well as some warning signs and construction signs, are not included in the inspection.

Although this is subject to change with time, the municipality will continue to maintain all regulatory and warning signs to a good to fair condition level based upon inspection.

For street signs and digital signs, the LOS is linear and based on age. The municipality will continue to maintain these assets to fair condition level and replace them if damaged before they reach their end of life.

4.9 GUIDERAILS DESIRED LEVEL OF SERVICE

The desired levels of service for guiderails is mainly driven by their functionality. The municipality will continue to repair damaged sections and continue to perform an annual spring inspection of its network. However, this asset is also linear, and replacement is based on age. The municipality will continue to maintain the level of service for these assets in good to fair condition level by synchronizing replacement during full road reconstruction.

5. RISK ASSESSMENT

The purpose of infrastructure risk management is to protect the municipality's ability to deliver essential public services. It focuses on minimizing disruptions and ensuring assets continue to function in a way that supports community safety, well-being, and service reliability. In order to do so, the municipality assesses both the consequences and the likelihood of occurrence.

East Ferris' risk management framework considers a broad range of potential threats: impacts on asset service levels; public and worker safety concerns; financial stability and sustainability; and environmental impacts.

For the purpose of this AMP, risk assessment is addressed on a high-level basis for each category under this section of the report. Moving forward, the municipality is considering the model proposed by the Municipal Finance Officers Association (MFOA) to rank risk in terms of likelihood and consequence of failure. This approach weighs individual consequence categories (strategic, environmental, health & safety, etc.) which are multiplied together to produce an overall consequence score. The likelihood of failure score does not require weighting and focuses on ranking probability on a scale of 1 to 5. The likelihood of failure is based on the asset condition. The weighted consequence score multiplied by the likelihood score is the overall risk score.

This approach provides a fair level of granularity in terms of assessing the asset condition, its failure rate and handling of consequences from business objectives. It is often difficult to attribute one risk score to an asset which may fail in a variety of ways with a variety of potential consequences. This can lead to opting for the "worst case" scenario thereby overestimating the true likelihood and/or consequences of an asset failure, skewing subsequent prioritization attempts. Therefore, adopting a summative approach to likelihood and consequence that is standard across all service areas will address this issue. The proposed municipal wide risk-based approach is intended to be relevant and to make the best use of current practices.

It is further understood that when using both the LOS (representing the needs) and the risks assessment for each asset within the AMP, it will help set spending priorities which in turn can be used as a business case when making capital investment decisions.

In addition, it is important to be mindful that East Ferris' population will continue to grow with steady construction of single-family dwellings. This also represents a growth in service demand and revenues needed to fund and maintain existing infrastructure.

Climate change is another factor that is already having an impact on maintaining municipal service levels. The municipality already experienced extreme weather events with more frequent high intensity rainfall and storm events, shifting temperature patterns, and more frequent freeze-thaw cycles affecting asset performance and lifecycle costs. These environmental impacts are expected to continue to impact infrastructure in various ways as follows:

- Transportation: the life cycle of roads will be shortened with more frequent freeze-thaw cycles. High intensity storm increases the risk of infrastructure failure for roads, bridges, and culverts.
- Flooding: Rapid spring melt and intense storms will continue to cause localized flooding. This will impact the LOS and increase the risk of infrastructure failure.
- Buildings: The life cycle analysis of certain building elements will be shortened when considering their environmental exposure. Extreme heat, increased precipitation, and wind levels are some of the main environmental factors that will have that impact with other factors such as raising energy costs and increasing maintenance demands.
- Estimates for Asset Replacement Values: Replacement cost estimates in this AMP provide indicative values for planning purposes. Actual costs for construction, rehabilitation, or acquisition will vary at the time of procurement. These estimates allow the municipality to understand the scale of expected capital needs but should not be relied on as contractor's estimates or for any purpose beyond general reference.

Unforeseen future events including extreme weather, or regulatory changes may impact asset performance and service demand in ways not anticipated in this AMP. These events may accelerate maintenance, rehabilitation, or replacement needs beyond current forecasts.

MFOA utilizes the following consequence table, likelihood table, and risk matrix table (Tables 56-58) to determine risk.

Consequence Table						
Category	1	2	3	4	5	Weight
	Negligible	Low	Moderate	High	Catastrophic	
Strategic	No affect on Community well-being and Organization's Strategic Goals. No media exposure	Negligible impact on Community well-being and Organization's Strategic Goals. Minor local media exposure	Moderate impact on Community well-being and Organization's Strategic Goals. Moderate local media exposure lasting for several days	Significant impact on Community well-being and Organization's Strategic Goals.Intense local media exposure lasting several weeks and/or provincial	Major impact on Community well-being and Organization's Strategic Goals. Significant national exposure lasting several days or weeks.	0.10
Environmental	Very negligible impact. Reversible within 1 week	Material damage of local importance. Minor, short-term (within 6 months) very isolated damage to the environment	Significant short term (less than 1 year) local damage to the environment	Significant long - term (greater than 1 year) widespread damage to the environment. GTA importance.	Major long - term (greater than 5 years) or permanent widespread damage to the environment. Some provincial importance	0.05
Health and Safety	No obvious potential for injury or affects to health	Minor medical attention may be required	Potential for minor injury or affects to health of an individual. Full recovery is expected.	Hospitalization of some individuals may be required for a short period of time	Emergency and / or long term hospitalization required for one or more individuals	0.20
Compliance	Breach of local standard operating procedures but not any mandatory policies or procedures	Ad hoc as opposed to systematic breaches of policies and procedures but not of laws or regulation	Breach of laws/ licenses, including a notifable breach resulting in recommendations and active monitoring by regulator/ instances of breach of operational policies	Prosecution: Fines=< 1M Show cause notice from regulator, enforceable undertaking; Significant and systematic breach of policy	Prosecution with potential for executives to be jailed. Fines> 1M , Loss of critical license/accredition. Significant and systematic breach of governance policies	0.20
Operational	Small number of customers experiencing service disruption No impact or reduced quality of service or service loss for few residents	Service disruption at a localized level Reduced quality of service or service loss for critical users for less than an hour An increase in complaints from the community (<10%)	Significant localized service disruption Service loss or major quality of service concern for critical users. An increase in complaints from the community (10%-25%)	Major service disruption Major service loss (less than a day and not able to maintain fire supply) A marked increase in complaints from the community (25%-50%)	Very major, widespread service disruption Disastrous service loss (for more than a day) Significant increase in complaints from the community (increase of 50% or more)	0.25
Financial Impact	Less than $5,000	$5,000 - $100,000	$100,000 - $250,000	$250,000 - $1M	Restoration is impossible or greater than $1M	0.20

Table 56: Consequence Table

Probability/ Likelihood Table					
	1	2	3	4	5
	Improbable	Unlikely	Possible	Likely	Almost Certain
Likelihood	Never happens under unusal circumstances	The failure of the asset might occur at rare time as there is few history of this event occuring. Probably never will except under exceptional circumstances	The failure of the asset might occur at some time as there is a history of this event occuring	There is strong possibility of the failure of the asset occuring as there is a frequent history of occurence	Very likely. Asset failure expected to occur in most circumstances.

Table 57: Probability/Likelihood Table

Ranking Matrix						
Likelihood	Consequence					
	1	2	3	4	5	
1	1	2	3	4	5	
2	2	4	6	8	10	
3	3	6	9	12	15	
4	4	8	12	16	20	
5	5	10	15	20	25	

Risk Levels:	
	▪ Risk is Severe for any thing 20 and above
	▪ Risk is High for any thing 15 and below 20
	▪ Risk is Medium High for anything above 8 but below 15
	▪ Risk is Medium Low for anything 4 and above but 8 and below
	▪ Risk is Low for anything below 4

Table 58: Risk Matrix Table

5.1 ROADS

For Roads, the risk analysis will be generally driven by the following factors:

Road Class – Traffic Count: The municipality maintains roads from Class 3 to Class 6. These road classes are categorized by posted speed and traffic count. Usually Class 1 & 2 are provincial highways and maintained by the province, although they are physically in the municipality. Historically, the main arterial and collector roads were prioritized, and with better road conditions, users have the tendency to exceed posted speed limits. This results in different levels of consequences based on road class.

Minimum Road Maintenance: In the winter months, risks increase for certain road conditions where horizontal and vertical alignments exist. Curves and hills are at risk, especially during winter.

Major Storm Events: The municipality has experienced an increase in major storm occurrences, and in various locations of the municipality. Risk mitigation strategies include regular condition assessments of the road condition, its drainage elements and the readiness for such events. The municipality will continue to proactively maintain the road network to mitigate the risk of failure under these circumstances.

Flooding: Roads located within floodplain remain at a higher risk when it comes to flooding. As the municipality experiences flooding, action plans to raise these sections of road are identified. It may be necessary to increase the size of culverts, increase the ditch capacity, and protect road embankments. The North Bay-Mattawa Conservation Authority (NBMCA) works closely with the municipality to warn of potential watercourse flooding as this may result in culverts being undersized to handle such flows resulting in road failure and washouts.

5.2 STRUCTURES

The Municipality has identified the following risks associated to bridge assets:

Critical Bridges: Although most bridges are critical, some have more impact on the community, where for instance Groulx Road bridge provides not only access to surrounding municipalities but also an alternative route to the 4-lane Highway 11. Edmond Bridge, having no alternative route, has an increased risk when considering emergency services accessing properties. These risk factors will contribute in setting priorities for repairs and replacements.

Bridge Closure: Although this always remains an alternative when it comes to certain roads, closing bridges in in East Ferris is not an option.

Aging Infrastructure: As all bridges continue to age, they will continue to deteriorate with time. The province mandates an annual inspection (OSIM) every 2nd year to better manage the general bridge conditions. The consultant provides a BCI score with each report that helps identify a risk increase for specific bridge components.

5.3 STORM DRAINAGE

The Municipality has identified the following risks associated with storm drainage assets:

Critical Strom Drainage Pipes: In most cases, the critical infrastructure for this asset are the pipes located in streams where there is continuous water runoff. More exposed to the elements, these pipes will deteriorate faster, and with runoff water, health and safety risks increase.

Material Type: Another factor that is considered in risk assessment is the material type. This can be linked to the design life cycle, but under risk assessment, it is mostly identifying the pipe type, as certain materials are better suited for certain environments. For example, having a corrugated steel pipe in a creek will increase the risk of failure for that pipe.

Climate and Environmental Impacts: With more severe storms and increased risk of flooding, certain pipes are more at risk than others.

Beaver Dams: It is not without saying that beavers are present in our municipality. The risk associated with beaver dams cannot be ignored. Often, dams will fail, and being mostly on Crown or private lands, they are not always visible from the roads. Assets located on the downstream of beaver dams are more at risk of failing with a high occurrence.

Safety and Compliance: To reduce the risk of failure for these assets, ongoing inspection is required to ensure no sediment and/or debris remain near the inlet of the structures that could increase the risk of plugging and/or failing.

5.4 STREET LIGHTING

The municipality has identified the following risks associated with street lighting assets:

Older High Pressure Sodium Streetlights: The older system has a higher risk of failure, and the replacement has to be completed in a timely manner in accordance with Minimum Maintenance Standards. As these assets are relatively simple, the municipality implemented a replacement plan and contracted out future repairs ensuring availability of replacement parts.

5.5 BUILDINGS & LAND IMPROVEMENTS

The Municipality has identified the following risks associated with buildings and land improvements assets:

Aging Facilities and Components: MPAC completed an analysis of the facilities helping to identify aging components and associated risks. The Corbeil Fire Hall has been identified as the next new building given the condition of the current building. Although East Ferris has many new buildings, large centers including the East Ferris Community Center will continue to have specific needs.

Building Use: Each facility has different users, and different consequences when it comes to high vs. medium vs. low building use. Some buildings are open to the public, some are fully utilized by the public, and some remain for municipal staff only.

Post Disaster: The municipality owns buildings that must remain post disaster and continue to provide services to the public under extreme situations. The consequence of failure for these infrastructure assets is much higher, having an increased impact when it comes to risk analysis.

5.6 OTHER LAND IMPROVEMENTS

When it comes to other land improvements, the consequence of failing plays a large role in risk assessment. As this section includes a wide range of assets from flag poles to parking lots to septic systems, they each have their priorities, consequence, and probability of failure. As identified in the consequence table, there are six categories that influence risk assessment.

5.7 VEHICLES AND EQUIPMENT

The municipality has identified the following risks associated with fleet assets:

Public Works: The municipal fleet when it comes to public works is critical to maintain a level of service on all roads on a year-round basis. During winter for example, snowplows ensure roads are safe. It can take over a year to replace plow trucks, and for this reason, certain pieces of equipment have their own risk assessment when it comes to failure.

Emergency Services: Firefighting equipment is critical to the municipality's emergency response capability and the safety of the residents. It is critical that the fire department fleet remains in excellent operating condition and remains within a certain age.

Aging Fleet: Several high-use service and emergency vehicles have exceeded their useful lives, increasing risk of breakdowns and service disruptions.

Operational Dependence: Dependence on single, specialized vehicles means that vehicle failures could delay critical services such as snow removal or emergency response.

Risk mitigation strategies include periodic maintenance and inspection, good planning when it comes to scheduled replacement, as well as good prioritization of the critical service vehicles to ensure the municipality can continue to service the public with reliability and in a safe manner.

5.8 SIGNS

Risk mitigation strategies with signs are better managed through the internal annual inspection for the retroreflectivity for regulatory and warning signs as per MMS requirements. Regular road patrol will continue to take place as regulated by the Province of Ontario, and when signs are reported damaged, the Municipality will continue to replace them in a timely manner. The AMP provides the anticipated year of replacement of existing signs based on their current level of reflectivity.

5.9 GUIDERAILS

Risk mitigation strategies for guiderails are better managed through annual inspection, mostly in the Spring, where damaged guiderails get scheduled for repair as soon as the damage is reported. The municipality will continue to work in collaboration with Ontario Provincial Police (OPP) to receive accident reports when guiderails are subject to property damage. As this asset depression is linear with age, the municipality will continue to incorporate that element with major road reconstruction projects.

5.10 LIMITATIONS AND ASSUMPTIONS

There are several limitations and assumptions that are made when it comes to the risk assessment process, including some of the following:

Limitation with the field condition assessment data: Detailed information is not always available at this point in time to determine the exact state of infrastructure and risk. In the absence of field condition assessment data, asset age and estimated useful life is usually used to approximate physical condition.

Premature wear of the asset: Condition assessment of certain assets is subject to premature wear, defaults, etc. It is not expected that this element of failure be captured during field inspections, unless a specific and detailed analysis is warranted.

Performance of certain assets may be assumed as “reliable” by staff, based on historical knowledge and experience.

6. ASSET MANAGEMENT STRATEGY

The Municipality of East Ferris adopted a Strategic Asset Management Policy to help the Municipality manage its assets by providing the necessary framework to integrate Asset Management into the municipality's daily decision making. The Municipality of East Ferris is committed to providing fiscally responsible services that support the sustainability and growth of its communities. The municipality will achieve this commitment by aligning the management of municipal assets with the goals, plans and policies of the municipality.

The purpose of the policy is to align the municipality's asset management with its current/future social and economic goals, create consistent guidelines and standards for the management of municipal assets, and meet the requirements of O. Reg. 588/17.

The section below identifies the strategy for each asset category.

6.1 ROAD ASSET MANAGEMENT STRATEGY

6.1.1 Current Pavement Condition vs. Projected Pavement Condition

The Roads Need Study completed a detailed analysis of the municipal road network confirming that the current level of funding will slightly increase the current pavement condition index (PCI) to an average of 67 in the next 10 years however it does not address the roads categorized in the "Now". When increasing the roads annual capital budget to an average of $1.38 million, the projected PCI will be increased to 79 in the next 10 years.

This assumes that the municipality will be in a position to maintain new reconstruction with appropriate maintenance and resurfacing, allowing the road system to reach a point where most activities will be preservation and resurfacing.

Where funding is limited, it may be necessary to maintain the resurfacing and preservation programs instead of the construction program. Many roads are currently beyond repair as they are categorized in the 'NOW' category. As they continue to deteriorate, these roads will require increased maintenance, and it is anticipated that the driving public will generate more complaints. To better manage, it may be necessary to introduce a *'maintenance paving budget'*. This is usually necessary when the municipality is financially obligated to defer the reconstruction needs and will assist in reducing maintenance efforts as well as anticipated complaints while deferring the road reconstructed.

6.1.2 Project Prioritization

When it comes to a Road Needs Study, the exercise to prioritize roads can be a straightforward exercise as funding is not a constraint. However, the AMP needs to balance financial capacity to be able to fund the road infrastructure while understanding what funds are available, while also juggling the other financial obligations. The need to fund rehabilitation and reconstruction needs identified in the Road Needs Study will present conflicting demands when it comes to prioritizing projects. The Road Needs Study provides ratings that deal strictly with the condition of the evaluated section.

It may be necessary to consider other needs for certain sections of roads, for example paved shoulders for active transportation or storm sewer replacement. Considering all needs, it may be necessary to break down the construction in phases to reduce the cost in comparison to full reconstruction.

6.1.3 Road Preservation Strategy

As hard surface roads age, there are specific treatments that are triggered as the road ages. Generally speaking, the roads will first require some crack sealing, later it will require a resurfacing that could vary from a microsurfacing to a single asphalt resurfacing, and later in life to a full double asphalt resurfacing. These treatments can be determined depending on the Pavement Condition Index. Once the road has reached a PCI that is too low, a full road reconstruction is required.

For surface treated roads, the treatments vary and generally require an additional single resurfacing. This treatment is often required once every 5 to 8 years depending on the traffic type and volume.

For gravel roads, the treatment consists in adding a new granular lift. Historically, the municipality has implemented this practice by dividing the granular road network into three zones: north, center and south. Each zone is scheduled to be resurfaced after a five-year cycle.

6.2 STRUCTURES – ASSET MANAGEMENT STRATEGY

6.2.1 Bridge Deck and Superstructure Lifecycle Maintenance

The OSIM reports provide recommendations including some rehabilitation work on a 1 to 10-year basis.

The minor and major rehabilitation recommendations are currently identified in the AMP 10-year plan and will continue to be identified during capital budget deliberations. For structures, resurfacing and bridge deck waterproofing and rehabilitations offer a very good return on investment.

6.2.2 Condition Assessment Cycle Recommendation - Structures

The municipality's practice has been to update the condition of the structures inventory in accordance with the legislated requirements. The bridge and culvert structures, with a span greater than 3 meters, should continue to be reviewed on a two-year cycle, as required by regulation.

6.3 STORM DRAINAGE - ASSET MANAGEMENT STRATEGY

The storm pipe (culvert) assets were all rated and prioritized based on condition assessment. Based on a LOS and a risk assessment, the structures in the "Now" category were prioritized and all to be replaced within the next 10 years were strategically assigned a replacement year identified in the AMP.

The municipality will continue to maintain all new structures, ensuring they remain free of debris and in good condition.

6.4 STREET LIGHTHING - ASSET MANAGEMENT STRATEGY

The strategy with this asset is strictly linear. The life cycle of aluminum signal poles, arms, conduit and wiring might be considered to be 40-50 years.

Installing LED streetlights saves electricity costs, reduces maintenance and improves traffic signal visibility. Currently, when streetlights fail or appear to produce insufficient luminosity and can't be repaired, they are replaced with LED.

6.5 BUILDINGS & LAND IMPROVEMENTS – ASSET MANAGEMENT STRATEGY

6.5.1 Buildings Lifecycle Maintenance

After construction of a new building, some initial maintenance/rehabilitation efforts will have to be undertaken within 12 to 25 years to maintain the lifecycle of the new building or structure. Generally, the roof cladding, windows, HVAC system, some plumbing fixtures should be replaced in the 20-to-25-year timeframe, with the building envelope being undertaken in the 25-to-35-year timeframe. Failure to follow a preventive and proactive maintenance schedule of timely repairs and rehabilitations will result in higher-than-expected repair costs, or worse, missing the optimum rehabilitation window completely.

6.5.2 Condition Assessment Cycle Recommendation - Buildings

The municipality has completed a recent condition of the building inventory. The municipality has not established a systematic building inventory review and will review that need within the next five years.

6.6 OTHER LAND IMPROVEMENTS – ASSET MANAGEMENT STRATEGY

The strategy with other land improvements assets is strictly linear. Although there is a wide difference in life cycle for each item identified within this category, the condition rating remained based on individual age for each asset evaluated. As the AMP is using projected needs, it is important to understand that further evaluation of specific assets identified for replacement may be needed in the future. Some of these assets may reach the 'End of Life' based on age; however, their condition may remain as good or fair. Under these circumstances, evaluation reports may be justified.

6.7 VEHICLES & EQUIPMENT – ASSET MANAGEMENT STRATEGY

Generally speaking, when vehicles or equipment are near their end of life, both the condition and annual operating costs are evaluated and become indicators determining whether vehicles or equipment should continue to be kept in service or be replaced.

The Municipality of East Ferris will also continue to prioritize Health and Safety by following Ontario regulations to ensure motor vehicles and equipment are safe to operate.

With good monitoring strategies and preventative maintenance throughout the lifecycle of these assets, the municipality will continue to minimize unplanned service interruption and unexpected repair/replacement costs.

6.8 SIGNS – ASSET MANAGEMENT STRATEGY

For the purpose of the AMP, the municipality will continue to use a projected replacement year based on sign conditions for regulatory and warning signs, while using a linear age depreciation approach for the other signs.

6.9 GUIDERAILS – ASSET MANAGEMENT STRATEGY

For the purpose of the AMP, the municipality will maintain the annual maintenance costs to keep these assets in good condition. Replacements are linear and based on age depreciation; however, the municipality will continue to identify the replacement need for these assets as part of road reconstruction projects.

7. FINANCING STRATEGY

Having a financial plan is critical for putting an asset management plan into action. The financing strategy described in this section demonstrates the municipality's commitment towards integrating asset management planning with financial planning and budgeting and to making full use of all available infrastructure financing tools.

The AMP identifies a financial plan that will consider the following approaches to address the funding shortfall while attempting to best align to the target lifecycle ratio:

Optimizing Asset Lifecycles

- Prioritize preventive maintenance to extend the useful life of assets.
- Implement efficient lifecycle strategies to reduce total costs while maintaining functionality.

Incremental Capital Budget Adjustments:

- Annual increases to the capital budget indexed to inflation or other cost indicators.
- Utilize assessment growth to add funds to capital reserves, where appropriate.

Enhanced Revenue Streams

- Explore additional grants, partnerships, and other funding mechanisms.
- Align projects with available senior government funding programs.

Risk-Based Prioritization

- Prioritize high-impact projects based on service levels and risk assessments.
- Shift resources to critical assets in need of urgent attention.

Revised Service Levels

- Adjust service levels where feasible to reflect financial realities while ensuring core services remain unaffected.

Debt Utilization

- Employ strategic debt financing for long-term assets with multi-generational benefits.

This AMP will help identify the financial resources required for sustainable asset management based on existing asset inventories, desired levels of service, and projected growth requirements.

Budgetary recommendations in this report do not include items related to development and growth; those should be considered as additional.

7.1 FINANCING STRATEGY - ROADS

Program funding recommendations are a function of the dimensional information, surface type, roadside environment, functional class of the individual assets and current unit costing. Recommended funding for the road system should include sufficient capital expenditures that would allow the replacement of infrastructure as the end of design life is approached, in addition to sufficient funding for maintenance, to ensure that full life expectancy may be realized.

Budgetary recommendations in this report do not include items related to development and growth; those should be considered as additional. Generally, that type of improvement or expansion to the system would be funded from a different source, such as development charges.

The budget recommendations bear a direct relationship to the value of the road system. East Ferris estimates the cost to replace the road system, to its current standard, is **$60,878,814**. The budget recommendations provided in this report are based on the constitution of the road system. This represents an opportunity to develop a financial plan in line with the asset management plan, for phased implementation.

7.1.1 Capital Depreciation

The estimated replacement/depreciation value of the municipal road system to the current standard is **$60,878,814**. This equates to an annual capital depreciation of **$2,435,153** based on a 25-year design life. The annual capital depreciation is strictly a function of the replacement cost and the design life. This estimate does not include bridges, culverts, cross culverts less than 3 metres, ditching, road base repair, grade raise, guiderails, signage or street lighting. The typical design life for a road structure is 25 years before reconstruction/replacement. If the life span is 25 years, then 4% of the replacement cost should be the annual contribution to the capital reserve, to ensure that it can be reconstructed in that time frame. The full estimated replacement/depreciation is based upon the replacement value of the road system over a 25-year life cycle. However, the 25-year life cycle can only be a reality if maintenance and preservation treatments such as crack sealing and hot mix asphalt overlays are delivered at the appropriate time. Inadequate maintenance and preservation will result in premature failure and increased life cycle costs.

7.1.2 Road Rehabilitation

Roads requires preventative maintenance. These treatments vary based on the age of the road asset. These include treatments such as crack sealing, slurry seal, resurfacing, etc. These treatments are typically done when pavements are in good to excellent condition, for example when the Pavement Condition Index (PCI) ranges from 65 to 90. These treatments are intended to extend the life of the road assets.

The treatment intervals vary, for pavement a resurfacing is likely to be recommended after the road reaches its tenth year, for surface treatment a single overlay is recommended after five to eight years.

To improve the LOS for roads from fair to good, it will be necessary to improve the current average PCI value of 60 towards a PCI of 80 as the adequacy level. To achieve this target in the next 10 years, it will be necessary to maintain an annual resurfacing program at $1.3 million per year on average. Although this cost represents the average annual financial need, it is important to identify that a total of almost $5 million is needed for current needs, representing investments needed to repair roads that require full reconstruction.

These estimates were obtained for the AMP as explained in the road section. This identifies that the municipality relies on Federal and Provincial funding assistance to carry out the full reconstruction of these assets, and that a detailed cost estimate will be necessary when funding programs become available.

7.1.3 System Performance at Various Budget Levels

WSP utilized prediction models to determine the future PCI values for the road assets. It is clear that with a zero budget, all road assets would deteriorate very quickly. WSP carried out on the basis of using the current funding model (indexed over 10 years), including the Canada Community Building Fund municipal allocation. Using the current funding model of $500,000 annually for hard surfaces and approximately $70,000 annually for gravel roads, the prediction model suggested rehabilitation treatments where the 10-year PCI value would slightly increase from 60 to 67 after 10 years.

As the Municipality of East Ferris' average PCI of the road system is currently 60 and should be increased to 80, it was determined that the existing budget level should be increased to meet the level of service target level.

7.1.4 ROADS – How much will it cost?

Table 59 shows the recommended allocation based on the recommended average funding level. The current needs are identified in the first column and would address the current priority needs to improve the current service level. The table also shows the amount required annually based on the time of need.

Asset	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Grand Total (10 Years)
Gravel Roads	$ 89,094	$ -	$ 135,318	$ -	$ 149,317	$ -	$ 89,094	$ -	$ 135,318	$ -	$ 598,140.80
Major Reconstruction	$ 4,469,069	$ 279,450	$ 275,950	$ 215,091	$ 329,706	$ 522,816	$ 1,719,495	$ 532,990	$ -	$ -	$ 8,344,567.71
Other Average Maintenance	$ 406,000	$ 406,000	$ 406,000	$ 406,000	$ 406,000	$ 406,000	$ 406,000	$ 406,000	$ 406,000	$ 406,000	$ 4,060,000.00
Road	$ 4,964,163	$ 685,450	$ 817,268	$ 621,091	$ 885,022	$ 928,816	$ 2,214,589	$ 938,990	$ 541,318	$ 406,000	$ 13,002,708.51

Table 59: 10 Year Program - Performance Model Output (Average Funding Level)

7.1.5 Recommendations – Long Term Sustainability

This report identifies the overall condition of the system. It will be necessary to continue road evaluation to confirm road adequacy and review the various strategies, programs and funding levels required over time. It is recommended to have a 3-to-5-year cycle review period with an update of the road system database.

The goal of pavement management strategy will remain to maintain the overall system adequacy. The funding level for road-related programming should be set at a sufficient level so as to ensure that overall system adequacy does not decrease over time.

7.2 FINANCING STRATEGY - STRUCTURES

7.2.1 Capital Depreciation

The estimated replacement/depreciation value of East Ferris bridge and culvert structures inventory to the current standard is $1,705,000. The estimated capital depreciation is $35,973 based on a 50-year design life for the steel and concrete structure and a 30-year service life for the wood structures. The annual capital depreciation is estimated based on replacement cost and the design life or service life. The typical design life for a bridge or culvert structure is 50 years if constructed prior to 2000, and 30 years was

selected for the wood structures; however, the life cycle can only be a reality if maintenance and preservation treatments such as waterproofing and resurfacing and minor rehabilitations are delivered at the appropriate time. Inadequate maintenance and preservation will result in premature failure and increased life cycle costs.

7.2.2 STRUCTURES – How much will it cost?

Program funding recommendations are a function of the constitution of the bridge and structure inventory. Recommended funding for the structures inventory should include sufficient capital expenditures that would allow the replacement of infrastructure as the end of design life is approached, in addition to sufficient funding for maintenance, to ensure that that full life expectancy may be realized.

Budgetary recommendations in this report do not include items related to development and growth; those should be considered as additional. Generally, that type of improvement or expansion to the system would be funded from a different source, such as development charges.

The budget recommendations bear a direct relationship to the value of the structures inventory. East Ferris estimates the cost to replace the structures inventory to the required improved standard at $2,353,000. The budget recommendations provided in this report are based on the constitution of the structures inventory. This represents an opportunity to develop a financial plan in line with the asset management plan, for phased implementation.

7.2.3 Recommendations – Long Term Sustainability

Based on the composition of the structures inventory, budget recommendations have been developed for annual capital and maintenance programs as follows;

- $302,400 funding requirement, based on the recommendations for the next 10 years as per the 10 Year Asset Management Plan from the 2024 HP Engineering Bridge inspection report.

In addition to the budgetary recommendations, the following recommendations are provided for the management of the structures inventory;

- The cycle for reviewing the structures inventory should be continued, reviewing the entire inventory on a two-year cycle.
- Structures with a BCI of less than 60 should be closely reviewed for replacement versus rehabilitation.
- Programming for the structures inventory should be reviewed to ensure that preservation and other service life extension treatments are optimized.

7.3 FINANCING STRATEGY – STORM DRAINAGE

7.3.1 Capital Depreciation

The estimated replacement/depreciation value of East Ferris storm drainage assets to the current standard is $7,379,948 (road cross culverts) and $625,889 (storm sewer) for a total of $8,005,837. As this category combines both road culverts and storm sewers, their estimated capital depreciation is

$295,198 based on a 25-year design life for the road culverts and $8,345 based on a 75-year design life for the storm sewers. The annual capital depreciation is estimated based on replacement cost and the design life. However, the life cycle can only be a reality if maintenance and minor rehabilitations are delivered at the appropriate time. Inadequate maintenance and minor rehabilitation will result in premature failure and increased life cycle costs.

7.3.2 STORM DRAINAGE – How much will it cost?

Although it is outlined in the AMP that it is recommended to invest a total of $2,602,673 over the next 10 years, there may be some economy of scale of up to 50% for road cross culverts that can be replaced in-house. The replacement cost identified assumes work will be done by contractors.

7.3.3 Recommendations – Long Term Sustainability

Based on the composition of the structures inventory, budget recommendations have been developed for annual capital and maintenance programs as follows:

- $302,400 funding requirement, based upon the recommendations for the next 10 years as per the 10 Year Asset Management plan from the 2024 HP Engineering Bridge Inspection Report.

In addition to the budgetary recommendations, the following recommendations are provided for the management of the storm drainage inventory:

- Deteriorating storm drainage pipes should be closely reviewed to prioritize their replacement.

7.4 FINANCING STRATEGY – STREET LIGHTING

7.4.1 Capital Depreciation

The estimated replacement/depreciation value of East Ferris street lighting to the current standard is $354,900. The estimated capital depreciation is $17,745 based on a 20-year design life. The annual capital depreciation is estimated based on replacement cost and the design life; however, the life cycle can only be a reality if maintenance and minor rehabilitations are delivered at the appropriate time. Inadequate maintenance and minor rehabilitation will result in premature failure and increased life cycle costs.

7.4.2 STREET LIGHTING – How much will it cost?

As outlined in the AMP, it is recommended to invest a total of $61,500 should be undertaken over the next 10 years to replace the old high pressure sodium lights with LED.

7.4.3 Recommendations – Long Term Sustainability

The maintenance cost of street lighting is very minimal and therefore will continue to be considered in

the operational budget only.

7.4 FINANCING STRATEGY – BUILDINGS & LAND IMPROVEMENTS

7.4.1 Capital Depreciation

The estimated replacement/depreciation value of East Ferris buildings to the current standard is $37,270,051. The estimated capital depreciation is $631,384 based on a 50-year design life for all buildings and on a 25-year design life for portable structures. The annual capital depreciation is estimated based on replacement cost and the design life; however, the life cycle can only be a reality if maintenance, preservation treatments and minor rehabilitations are delivered at the appropriate time. Inadequate maintenance and preservation will result in premature failure and increased life cycle costs.

7.4.2 BUILDINGS & LAND IMPROVEMENTS – How much will it cost?

The municipality identified the need to replace the Corbeil Fire Hall and a projected construction cost of $3,500,000 has been identified for this new construction. In addition, and as outlined in subsection 3.6.3.1 of this report and re-shown below, the following recommended investments that should be undertaken over the next 20 years in building improvement costs is $9,148,775.

Building Category	Current Need	1-5 years	6-10 years	Over 10 Years	Total Needs for 20 years
Municipal Office	---	$10,000	$20,000	$45,000	$75,000
Public Works Garage	---	$10,000	$20,000	$45,000	$75,000
Sand Storage Build.	---	---	---	$25,000	$25,000
Stand Fabric Cover	---	---	---	$150,000	$150,000
Corbeil Fire Hall	---	$25,000	$20,000	$45,000	$90,000
Astorville Fire Hall		$25,445	$42,621	$192,350	$260,416
Corbeil Park Hall	$10,000	$19,004	$75,063	$283,555	$387,622
Corbeil Outdoor Shed	---	$2,500	$500	$2,000	$5,000
EFCC	$1,250,000	$1,823,045	$938,452	$2,177,105	$6,188,602
Library	---	$191,794	$71,565	$280,057	$543,416
OPP Training Center	$70,000	$27,990	$293,415	$882,314	$1,273,719
Medical Center	---	$10,000	$20,000	$45,000	$75,000
Grand Total	**$1,330,000**	**$2,144,778**	**$1,501,616**	**$4,172,381**	**$9,148,775**

7.4.3 Recommendations – Long term sustainability

According to the MPAC Building Condition Report, the total requirements are $9,148,775 over the next 20 years.

Based on the composition of the buildings, budget recommendations have been developed for annual capital and maintenance programs as follows:

- $631,384 for the buildings capital/depreciation

- $457,439 for average annual requirement, based upon the recommendations for the next 20 years.

7.5 FINANCING STRATEGY – OTHER LAND IMPROVEMENTS

7.5.1 Capital Depreciation

The estimated replacement/depreciation value of East Ferris other land improvements to the current standard is $2,541,256. The estimated capital depreciation is $132,465 based on itemized life expectancy varying between 15 to 50-year design life. The annual capital depreciation is estimated based on replacement cost and the design life.

7.5.2 OTHER LAND IMPROVEMENTS – How much will it cost?

Although the estimated replacement/depreciation value in this category remains high for the municipality, the replacement plan identified in this AMP remains linear based on the individual asset age. The projected $770,064 total replacement cost does not take into consideration depreciation.

7.5.3 Recommendations – Long Term Sustainability

As certain assets are identified as having reached their end of life, further evaluation will be required to better determine if they can remain operational, thus postponing their replacement.

As the AMP gets reviewed in the future, the risk associated with this decision is that it will return the assets that have beyond their expected life to the current needs, thus accumulating that financial obligation.

7.6 FINANCING STRATEGY – VEHICLES AND EQUIPMENT

7.6.1 Capital Depreciation

The estimated replacement/depreciation value of East Ferris vehicles and equipment to the current standard is $4,165,000 and $3,159,841, respectively. The estimated capital depreciation for vehicles and equipment is $132,465 and $228,058, respectively, based on itemized life expectancy varying between 5 to 25-year design life. The annual capital depreciation is estimated based on replacement cost and the design life.

7.6.2 VEHICLES AND EQUIPMENT – How much will it cost?

Although the estimated replacement/depreciation value in this category remains high for the municipality, the replacement plan identified in this AMP remains subject to many factors, including proper preventative maintenance that may extend the individual asset replacement year.

As outlined in the AMP, it is recommended to invest a total of $3,170,000 in vehicles and a total of $1,009,350 in equipment over the next 10 years based on individual linear depreciation.

7.6.3 Recommendations – Long Term Sustainability

As certain assets are identified as having reached their end of life, further evaluation will be required to better determine if they can remain operational, thus postponing their replacement.

As the AMP is reviewed in the future, the risk associated with this decision is that it will return the assets that have reached beyond their expected life to the current needs, thus accumulating that financial obligation.

7.7 FINANCING STRATEGY – SIGNS

7.7.1 Capital Depreciation

The estimated replacement/depreciation value of signs to the current standard is $71,750. The estimated capital depreciation is $6,673 based on itemized life expectancy varying between 10 to 20 years design life.

7.7.2 SIGNS – How much will it cost?

As outlined in the AMP, it is recommended to invest a total of $71,750 that should be undertaken over the next 10 years to maintain this asset to current standards. This amount represents a full replacement of all signs. This projection remains linear based and is subject to change based on annual inspection.

7.7.3 Recommendations – Long Term Sustainability

The replacement cost of signs is very minimal and therefore will continue to be considered in the operational budget only.

7.8 FINANCING STRATEGY – GUIDERAILS

7.8.1 Capital Depreciation

The estimated replacement/depreciation value of guiderails to the current standard is $392,338. The estimated capital depreciation is $15,694 based on a 25-year design life.

7.8.2 GUIDERAILS – How much will it cost?

As outlined in the AMP, it is recommended to invest a total of $50,000 over the next 10 years to maintain this asset to current standards. This amount is based on historical maintenance costs. The replacement of these assets was historically incorporated in full road reconstruction, therefore the recommendation for the municipality is to continue this practice.

7.8.3 Recommendations – Long Term Sustainability

The maintenance cost of guiderails is very minimal and therefore will continue to be considered in the operational budget only, while the full reconstruction will remain part of road reconstruction projects.

7.9 FINANCING STRATEGY ALL ASSETS

The following table outlines the recommendations based upon current funding levels and TON. As shown, the current funding level is approximately $15.321 million short of the recommended budget when you consider the entire 10 years. Further analysis is required for recommendations with respect to debt and financing based upon the desired levels of service.

7.9.1 10 Year Program

Asset	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Grand Total (10 Years)
Road	$ 4,964,163	$ 685,450	$ 817,268	$ 621,091	$ 885,022	$ 928,816	$ 2,214,589	$ 938,990	$ 541,318	$ 406,000	$ 13,002,709
Structure	$ 200,400	$ -	$ 24,000	$ 24,000	$ 30,000	$ 24,000	$ -	$ -	$ -	$ -	$ 302,400
Storm Drainage	$ 325,334	$ 291,088	$ 359,580	$ 308,211	$ 273,966	$ 222,597	$ 205,474	$ 205,474	$ 205,474	$ 205,474	$ 2,669,000
Street Lighting	$ 15,375	$ 15,375	$ 15,375	$ 15,375	$ -	$ -	$ -	$ -	$ -	$ -	$ 61,500
Building	$ 3,500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,500,000
Building Improvement	$ 1,758,956	$ 428,956	$ 428,956	$ 428,956	$ 428,956	$ 300,323	$ 300,323	$ 300,323	$ 300,323	$ 300,323	$ 4,976,394
Other Land Improvement	$ 364,362	$ 225,000	$ -	$ -	$ 25,000	$ -	$ 20,000	$ -	$ 135,702	$ -	$ 770,064
Vehicle	$ 140,000	$ 160,000	$ 750,000	$ -	$ 435,000	$ -	$ -	$ 815,000	$ 870,000	$ -	$ 3,170,000
Equipment	$ 270,000	$ 15,000	$ 13,000	$ 225,000	$ 173,891	$ -	$ 114,959	$ 177,000	$ 15,000	$ 5,500	$ 1,009,350
Sign	$ 5,300	$ -	$ -	$ -	$ -	$ 3,600	$ -	$ -	$ 36,000	$ 26,850	$ 71,750
Guiderail	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 50,000
TOTAL	**$ 11,548,890**	**$ 1,825,869**	**$ 2,413,179**	**$ 1,627,633**	**$ 2,256,835**	**$ 1,484,336**	**$ 2,860,346**	**$ 2,441,787**	**$ 2,108,817**	**$ 949,147**	**$ 29,583,166**
Projected Budget	$ 5,195,437	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 14,195,437
Shortfall	-$ 6,353,453	-$ 825,869	-$ 1,413,179	-$ 627,633	-$ 1,256,835	-$ 484,336	-$ 1,860,346	-$ 1,441,787	-$ 1,108,817	$ 50,853	-$ 15,387,729

Table 60: Recommended Capital Investments – Next 10 Years