Addendum to Asset Management Plan

State of Local Infrastructure, Levels of Service
& Lifecycle Management Strategy
2024

TOWNSHIP OF MACHAR
Always in Season

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Introduction

As required by O. Reg. 588/17 (the "Regulation"), municipalities are required to include all assets (core and non-core) in their Asset Management Plan (the "Plan") by July 1, 2024. The Plan must include current levels of service, an assessment of inventory, and lifecycle activities required to maintain the current level of service. The purpose of this addendum to the Township of Machar's 2017 Asset Management Plan is to meet the July 1, 2024 requirements of the Regulation.

The Addendum provides an update of the Township's asset inventory as at December 31, 2022. All dollar amounts have been updated to reflect 2022 dollars. Other asset data, such as condition ratings, have been updated where possible to reflect more accurate information. This will provide the public with updated information on Township assets. It will also better inform Council and Township staff in the decision-making process and planning for the future.

The next update to the Plan will be completed before the July 1, 2025 deadline to include proposed levels of service and a financial strategy for each asset class.

Overview

The addendum to the Plan includes the state of local infrastructure, current levels of service, and lifecycle strategy for six (6) asset classes, including: Roads, Bridges and Culverts, Buildings, Vehicles, Machinery and Equipment, and Land Improvements. The purpose of the information presented in this addendum is to assist in decision-making and planning for the future. Asset classes along with their current replacement values (CRVs) are shown in Table A1. A visual representation of the assets distributed by replacement value is set out in Figure A1. Following the presentation of each asset class is a brief discussion on the impacts of population and economic growth.

Table A1: Asset Class CRVs

Asset Class	Current Replacement Value
Roads	$8,322,581
Bridges and Culverts	$7,636,000
Buildings	$1,823,000
Vehicles	$867,358
Machinery and Equipment	$951,652
Land Improvements	$285,112
Total	**$19,885,703**

Figure A1: CRV Distribution by Asset Class
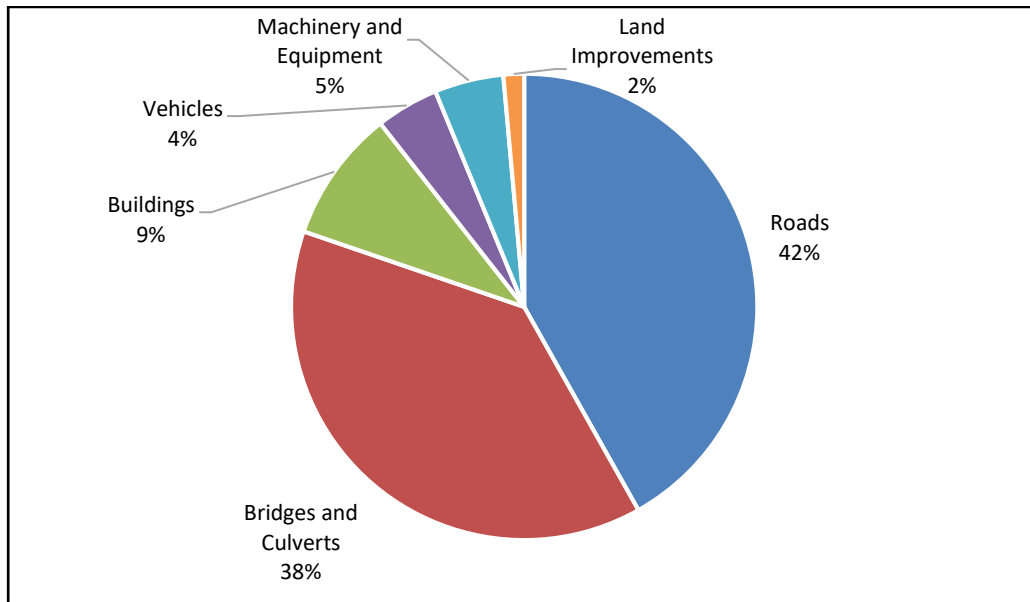
Roads

State of Local Infrastructure

The Township of Machar's road network is its largest asset category in terms of size and value. The Township maintains roads with two types of surfaces, including 71.34 centreline km of gravel and 44.52 centreline km of low-class bituminous (LCB). The inventory of gravel roads includes both year-round and seasonally maintained roads, of which 9.8% of total roads are seasonally maintained. The distribution of roads by surface type is illustrated in Figure A2.

The average age of gravel road surfaces is 3.5 years, while the average age of paved roads surfaces is 4 years. Only gravel roads where date of last complete resurfacing is known have been included in this calculation. In many cases gravel may be applied to small sections of road as determined to be necessary, and not the entire road, so the true age of these roads is difficult to determine. Micro-surface treatment has been applied to multiple surface-treated Township roads, including Eagle Lake Road; however, its application has not been included in the calculation of road age. The intent of the micro-surfacing is to increase useful life and decrease operating costs of the already existing road surface.

The cost to replace the entire road network, in 2022 dollars, is $8,322,581. This figure excludes normal operating expenditures, such as road signs and street lights, as well as road base costs. A breakdown of the current replacement values for the Township's roads is shown in Table A2.

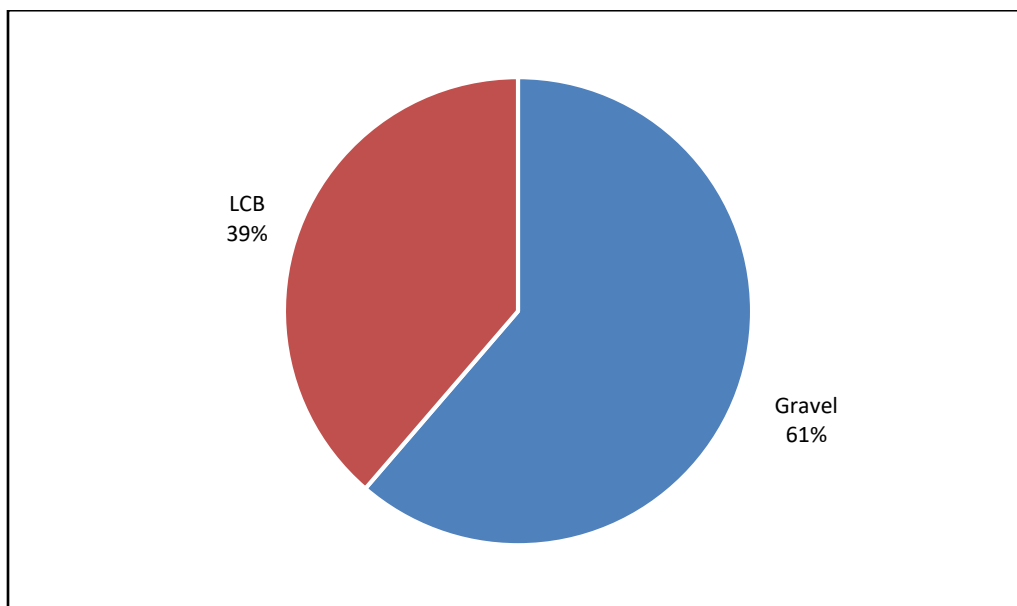Figure A2: Road Classification by Surface Type

Table A2: Road Network CRVs

Surface Type	Length (KM)	Current Replacement Value
Gravel	71.34	$2,466,239
LCB	44.52	$5,856,342
Total	**115.86**	**$8,322,581**

In 2022 Township staff assessed the condition of its gravel and paved roads. Gravel roads were assessed on a scale consisting of Good, Fair, and Poor. Paved roads were assessed on a different scale, using the Pavement Condition Index (PCI), which rates roads on a scale of 0 – 100, where 0 represents the road in failed condition and 100 in a new condition state.

The summary of condition states for gravel roads, derived from the MTO's *Manual for Condition Rating of Gravel Surface Roads*, can be found in Table A3. Table A4, derived from the MTO's *Manual for Condition Rating of Surface-Treated Pavements*, details condition states for paved roads and their corresponding values.

Table A3: Gravel Road Condition States

Condition State	Description
Good	Roadway surface well shaped with shoulder between roundings. Some distress manifestations in slight to moderate class such as loose gravel, dust, potholes, etc. There may be a few soft spots of frost heaving when evaluation is made in late spring. Good drainage for surface run-off on roadway and shoulder.
Fair	Mixture of properly shaped roadway surface and improperly shaped areas. Shoulder distress manifestations such as ponding and overgrowth evident between roundings in slight to moderate class. Various surface distress manifestations present such as washboarding, potholes, etc., in slight to moderate class. Localized breakup may be present.
Poor	Majority of roadway surface improperly shaped. Shoulder distress manifestations in moderate to severe class. Various roadway surface distress manifestations making travel unpleasant because of washboarding, dust, potholes, distortions, etc. Localized breakup areas.

Table A4: Paved Road Condition States

Pavement Condition Index Range	Condition State	Description
80 - 100	Excellent	Pavement is in excellent condition with just a few bumps or depressions from slight surface deformation. No surface defects such as streaking, potholes, or cracking distresses. Ride is very good.
60 - 79	Good	Pavement is in good condition with just a few bumps or depressions from slight to moderate surface deformation. Intermittent slight to moderate surface defects and/or cracking distresses. Ride is good.
40 - 59	Fair	Pavement is in fair condition with intermittent to frequent bumps or depressions from slight to moderate surface deformation. Intermittent to frequent moderate surface defects and/or cracking distresses. Ride is fair.
20 - 39	Poor	Pavement is in poor condition with frequent bumps or depressions from moderate surface deformation. Frequent moderate to severe surface defects and/or cracking distresses. Localized slight to moderate alligatoring crack may be present indicating pavement structural failure. Ride is poor.
0 - 19	Very Poor	Pavement is in very poor condition with extensive bumps or depressions from moderate to severe surface deformation. Extensive to severe surface defects and/or cracking distresses. Frequent slight to moderate alligatoring may be present, indicating pavement structural failures. Ride is very poor.

At their assessment in 2022, gravel roads in the Township of Machar received a weighted average condition rating of fair (2.35 rated on a scale of 1-3). It should be noted that the condition of gravel roads can change quickly based on a variety of factors including traffic volume, weather, and grading frequency. Paved roads received a weighted average PCI rating of 75.33, indicating the Township's paved roads are in good condition. A breakdown of road conditions for gravel roads are displayed in Figure A3, while paved roads are shown in Figure A4. This information is summarized in Table A5 below.
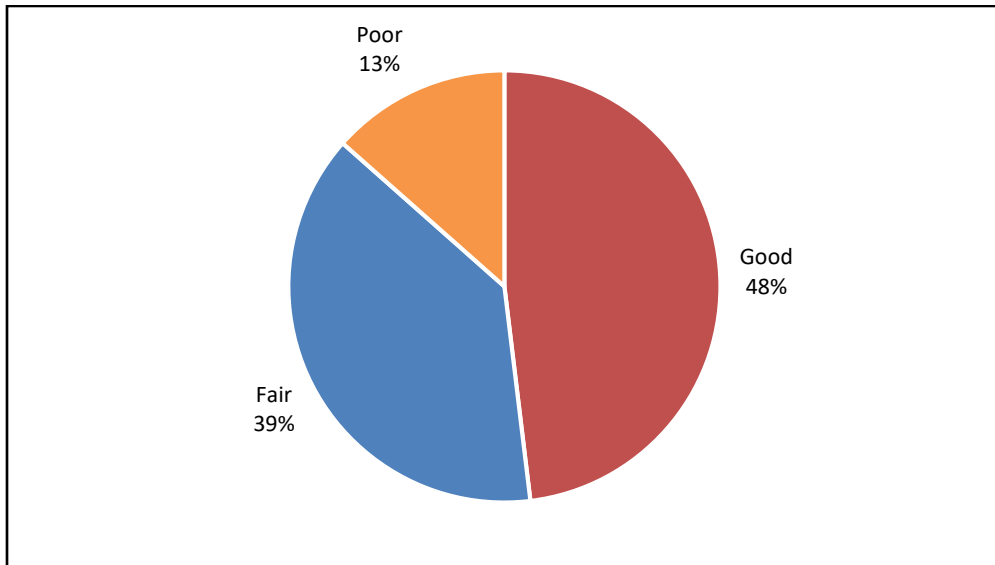
Figure A3: Gravel Road Condition Ratings

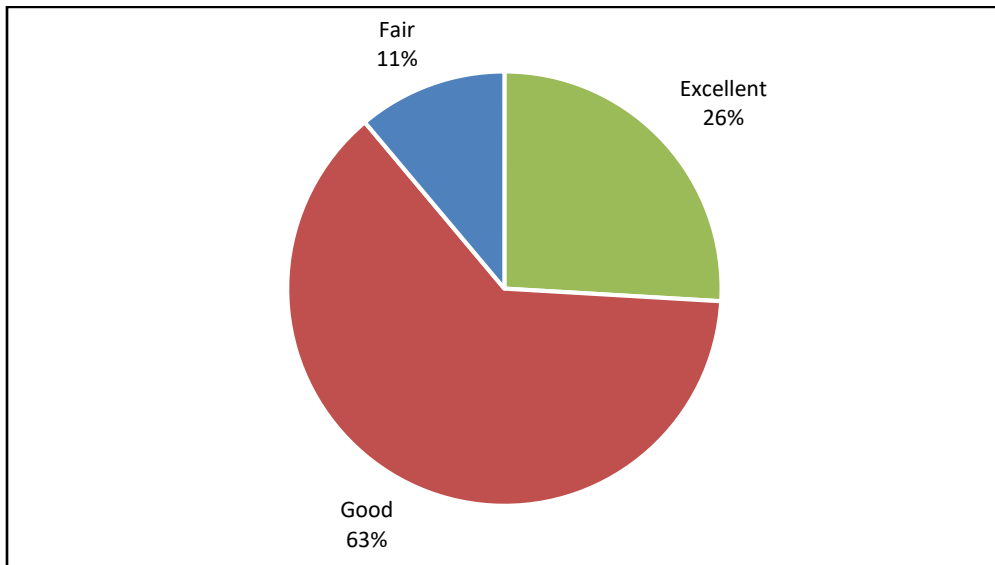Figure A4: Paved Road Condition Ratings

Table A5: Road Network Condition Ratings

Surface Type	Length (KM)	Condition Rating
Gravel	71.34	Fair (2.35)
LCB	44.52	75.33
Total	115.86	N/A

Moving forward, it will be important for the Township to regularly assess the condition of its roads to maintain accurate data and plan accordingly for the future. This may include assessment of the roads by Township staff, as well as studies completed by professional firms. Condition data will need to be updated at minimum every five years as required by O. Reg. 588/17.

Current Levels of Service

Table A6 below outlines the qualitative descriptions used to determine the community levels of service provided by the Township of Machar's road network.

Table A6: Community Levels of Service - Roads

Service Attribute	Qualitative Descriptions	Performance
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	The Township's road network contains 115.86km of gravel and paved roads which provide travel throughout the Township and access to neighbouring municipalities. Our most heavily trafficked road is Eagle Lake Road, the Township's main arterial road. The Township's road network allows numerous individuals to access areas which may include residential, commercial, and tourist locations, such as Mikisew Provincial Park.
Quality	Description or images that illustrate the different levels of road class pavement condition	Table A3 and Table A4 provide descriptions of road conditions.

Table A7 describes the technical levels of service which relate to the road network.

Table A7: Technical Levels of Service - Roads

Service Attribute	Performance Measure	2022 Performance
Scope	Number of lane-kilometres of arterial roads as a proportion of square kilometres of land area of the Township	0.16km/km^2
	Number of lane-kilometres of collector roads as a proportion of square kilometres of land area of the Township	N/A
	Number of lane-kilometres of local roads as a proportion of square kilometres of land area of the Township	1.09km/km^2
Quality	For paved roads in the municipality, the average pavement condition index value	75.33
	For unpaved roads in the municipality, the average surface condition	2.35 (Good)

Lifecycle Management Strategy

Gravel Roads

The assessments for gravel roads are carried out by Township staff. The decision to regravel is often based on which roads need resurfacing first, as well as other factors such as traffic levels. Determining a strategy for gravel roads can be challenging as the condition of these roads can change rapidly based on weather, level of traffic, and type of traffic.

To extend the life of gravel roads, preventative maintenance is carried out. These activities include grading, dust suppression, ditching, brushing, and spot/section replacement of gravel. Grading may occur 2-3 times per year on average, while calcium is often added once per year, dependent on road traffic volumes. Ditching and brushing activities often take place in 10-year cycles.

While much of the lifecycle management strategy is based on observations of many factors and difficult to predict, the Township can estimate when specific activities are likely needed to occur. The Township's most current Road Needs Study recommends gravel roads be resurfaced every 3-5 years. A generalized lifecycle model, with consideration taken from the Road Needs Study, can be found in Table A8. The average annual cost per centerline kilometer is $2,932. With 71.34km of gravel roads, the total average annual lifecycle capital cost is $209,168.

Table A8: Generalized Lifecycle Model - Gravel Roads

Activity	Cost per Centreline KM	Average Annual Cost per Centreline KM	Age
Regravelling	$14,662	$2,932	5

Surface Treated Roads

In a similar manner to gravel roads, Township staff generally decide to perform specific lifecycle activities on surface-treated roads based on their assessment of the road condition. Preventative maintenance, which may include ditching, brushing, and patching, are carried out daily or as needed to extend the life of the road. Micro-surface treatment may also be applied to higher traffic roads to extend road life. When the road is no longer feasible to repair, resurfacing takes place as funds allow.

A plan to resurface roads is in place; however, if it appears there is greater need on other roads, the decision may be made to prioritize those roads first. Although many decisions are currently made on an as-need basis, there are also generalized lifecycle models, found in Table A9, which can be considered when planning for future lifecycle activities.

Table A9: Generalized Lifecycle Model - Surface Treated Roads

Activity	Cost per Centreline KM	Average Annual Cost per Centreline KM	Age
Micro-surface	$30,170	$2,155	2
SST	$17,955	$1,282	7
Pulverize and DST	$88,596	$6,328	14
Total	**$136,721**	**$9,765**	

Based on this lifecycle model, the average annual lifecycle capital cost is $434,737 for 44.52km of LCB roads. Table A10 outlines the total average annual lifecycle costs for roads.

Table A10: Average Annual Lifecycle Costs - Roads

Surface Type	Average Annual Lifecycle Cost
Gravel	$209,168
LCB	$434,737
Total	**$643,905**

Figure A5 displays the 10-year forecast for the estimated annual capital funding requirements. Expenditures are not expected to be even and, therefore, plans should be made with this in mind. Strategies could include adjusting the timeline for which certain projects take place or contributing to reserves for known future projects. It should be noted that the figures may be imprecise to a degree because of the uncertainty of the last date of resurfacing for many gravel roads. Gravel roads where the date of last resurfacing is unknown have been included in the backlog.

The large funding increase required in 2033 is related to Eagle Lake Road coming due for resurfacing. As the Township's main arterial road, it is a crucial part of the road network which requires large amounts of funding to resurface. Various funding options, such as grants, will be explored when it comes time to resurface the road.

Figure A5: 10-Year Capital Forecast – Roads
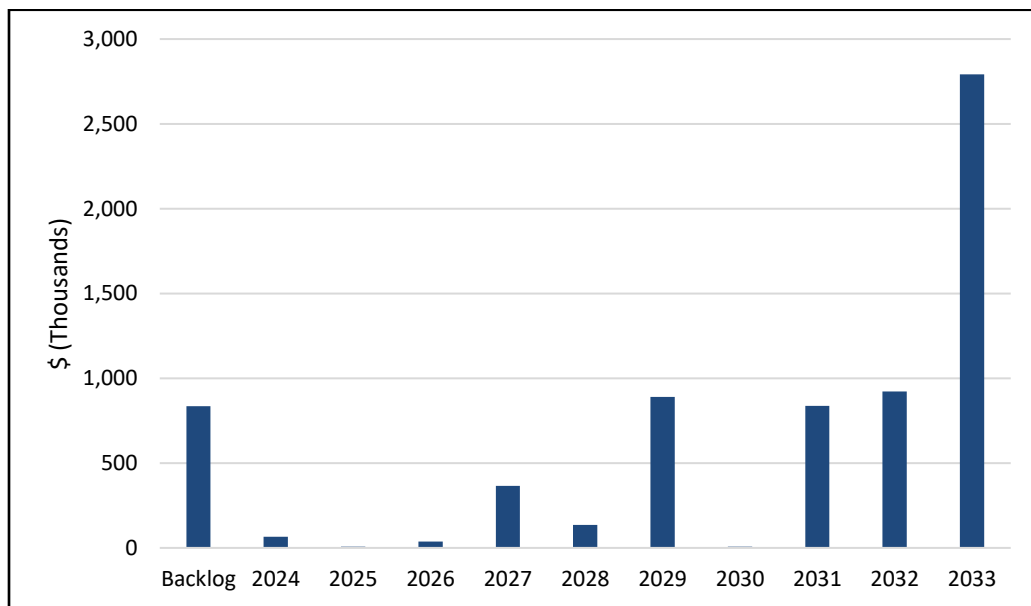
Bridges and Culverts

State of Local Infrastructure

The Township's inventory of bridges and culverts contains five structures. This includes three structural culverts and two bridges. Structural culverts are defined as spanning 3 metres or greater. The bridge and culvert assessments are based on the 2022 Ontario Structure Inspection Manual (OSIM) inspections completed by a professional engineering firm.

It is estimated that the average useful life of the bridges and structural culverts is 75 years. The average age of the Township's bridges is 67 years, while culverts have an average age of 52 years.

The cost to replace all bridges and structural culverts, in 2022 dollars, is $7,636,000. A breakdown of the current replacement values for these assets is shown in Table A11.

Table A11: Bridge & Culvert CRVs

Structure Type	Number of Assets	Current Replacement Value
Bridges	2	$3,963,000
Structural Culverts	3	$3,673,000
Total	**5**	**$7,636,000**

As legislated by the Province of Ontario, it is required that all bridge and culvert structures with a span greater than 3.0 meters be inspected under the direction of a Professional Engineer at no greater than two (2) year intervals. The inspection methodology and reporting must be done in accordance with the Ontario Structure Inspection Manual (OSIM). In compliance with this legislation, the Township of Machar completed its most recent OSIM inspection in 2022, where bridge conditions were assessed and recommendations for improvements provided in the report.

Bridges and culverts, similar to roads, can be rated on a scale called the Bridge Condition Index. Table A12, derived from the MTO's *Ontario Structure Inspection Manual – 2008* outlines the condition states of these assets.

Table A12: Bridge & Culvert Condition States

BCI Range	Condition State	Description
70-100	Good	Not typically any maintenance required within the next five years.
60-69	Fair	Maintenance work needed within the next five years.
0-59	Poor	Maintenance work needed within one year. Structure may require a load restriction.

The final report which resulted from the OSIM inspection did not assign cumulative values to individual assets or the asset class as a whole. Therefore, there is not an overall condition rating for bridges or structural culverts at this time. This is summarized in Table A13. The next inspection is due in 2024, and it is expected BCI values will be able to be applied to the Bridge and Culverts asset class at that time.

Table A13: Bridge & Culvert Condition Ratings

Structure Type	Number of Assets	Condition Rating
Bridges	2	Not Currently Available
Structural Culverts	3	Not Currently Available
Total	5	N/A

Moving forward, it will be important for the Township to continue with inspections every two years so that maintenance, repairs, and replacement are planned and carried out at the time which is most cost effective, without compromising safety.

Current Levels of Service

Table A14 below outlines the qualitative descriptions used to determine the community levels of service provided by the Township of Machar's bridges and culverts.

Table A14: Community Levels of Service - Bridges & Culverts

Service Attribute	Qualitative Descriptions	Performance
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	The Township of Machar has two bridges and three structural culverts. Structural culverts are classified as spanning 3 metres or greater. None of the bridges have loading or dimensional restrictions. This allows various types of vehicles to cross over the bridges without restriction, including heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, and cyclists.
Quality	Description or images of the condition of bridges and how this would affect use of the bridges	Table A12 provides descriptions of bridge and culvert conditions.
	Description or images of the condition of culverts and how this would affect use of the culverts	

Table A15 describes the technical levels of service which relate to the bridges and culverts.

Table A15: Technical Levels of Service - Bridges & Culverts

Service Attribute	Performance Measure	2022 Performance
Scope	Percentage of bridges with loading or dimensional restrictions	0%
Quality	For bridges in the municipality, the average bridge condition index value	Not Currently Available
	For structural culverts in the municipality, the average bridge condition index value	Not Currently Available

Lifecycle Management

The OSIM reports required every two (2) years will be the main source relied upon for managing the lifecycle of the Township's bridges and culverts. The reports recommend activities which should occur within the next ten (10) years. It is outlined within the report which activities are highest priority and should occur first. As mentioned, bridges are designed to have a 75-year life. However, during their life, repairs and rehabilitation need to take place so the useful life can be met or surpassed. Table A16 outlines a generalized lifecycle model for bridges.

Table A16: Generalized Lifecycle Model - Bridges

Activity	Age
Minor Rehabilitation	25
Major Rehabilitation	50
Replacement	75

Like bridges, culverts also have an estimated 75-year useful life. Periodic lifecycle activities are required to meet this lifespan. Table A17 outlines a generalized lifecycle model for culverts.

Table A17: Generalized Lifecycle Model – Culverts

Activity	Age
Replacement	75

The 2022 OSIM Report suggests budgeting 1.9%, or $147,000, of the overall replacement value of the Township's entire structure inventory annually to maintain the current system. The $147,000 does not include the estimated $703,000 needed in the next ten (10) years to complete the recommended rehabilitation needs. In addition to the recommendations in the 2022 Report, the Township intends to perform preventative maintenance in the attempt to preserve the current condition of the assets and slow any deterioration which may occur.

The generalized lifecycle models for bridges and culverts, as well as recommendations and estimates from the 2022 OSIM Report, have been used to develop a 10-year forecast for lifecycle activities. Figure A6 shows the estimated annual capital funding requirements for the next ten (10) years. Since the expenditures are not estimated to be the same each year, planning ahead with the use of scheduling and reserves should be considered.

Figure A6: 10-Year Capital Forecast - Bridges & Culverts
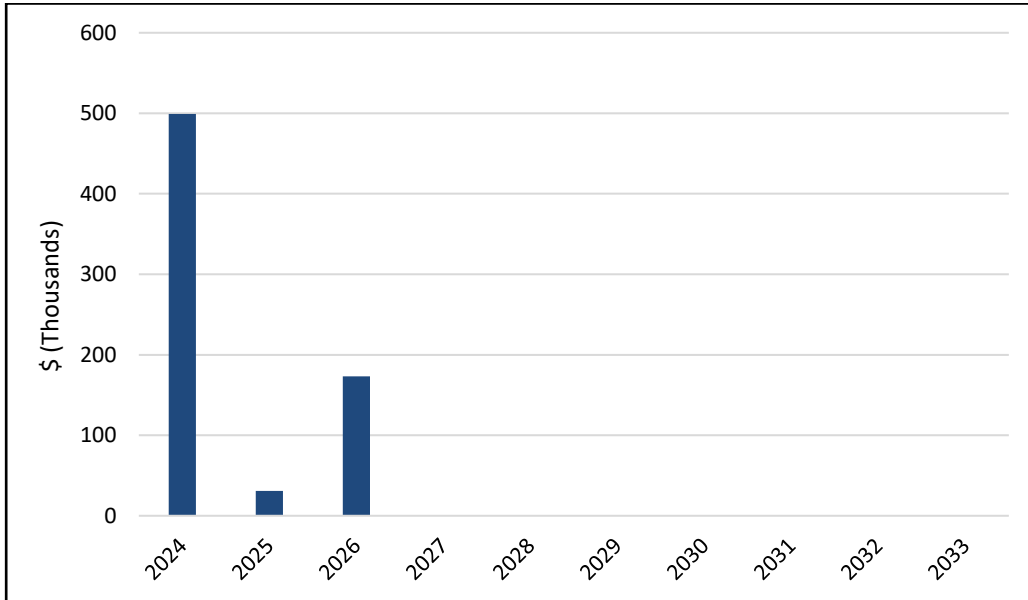
Buildings

State of Local Infrastructure

The Township of Machar is responsible for operating five (5) buildings. These buildings are used for municipal and recreational use. They are a key part in carrying out the day-to-day operations of the Municipality and providing a high level of service to residents and visitors.

The average age of the buildings is 40.4 years (weighted by replacement value). The Township is working on updating its inventory going forward to calculate the average age by asset component; however, current data is not advanced enough at this time for that figure.

The cost to replace the Township's buildings, based on 2022 insurance estimates, is $1,823,000. A breakdown of these costs can be found in Table A18.

Table A18: Building CRVs

| Department	Number of Buildings	Current Replacement Value
Administration	1	$475,200
Public Works - Roads	2	$1,015,800
Public Works - Landfill	1	$200,400
Parks	1	$131,600
Total	5	$1,823,000

Staff assessments have been carried out to determine the condition ratings of the Township's buildings. Buildings were assessed on a scale ranging from excellent to very poor. This scale along with corresponding descriptions can be found below in Table A19.

Table A19: Building Condition States

Condition State	Description
Excellent	Like new condition. No defects.
Good	Minor defects noticeable. Minimal repairs needed.
Fair	Some defects/deterioration in occurrence. Use of the asset not greatly affected. Some repairs needed.
Poor	Major defects/deterioration. Function of asset severely affected. Major rehabilitation or replacement is needed.
Very Poor	Asset is no longer functional. Replacement is needed.

The most recent assessment of buildings shows that the average condition rating is fair, based on the weighted replacement value. This indicates that buildings in the Township may need some repairs; however, the use of the buildings is not generally affected by these needs and service can continue to be provided. Condition ratings distributed by current replacement value can be viewed in Figure A7.

Figure A7: Building Condition Ratings
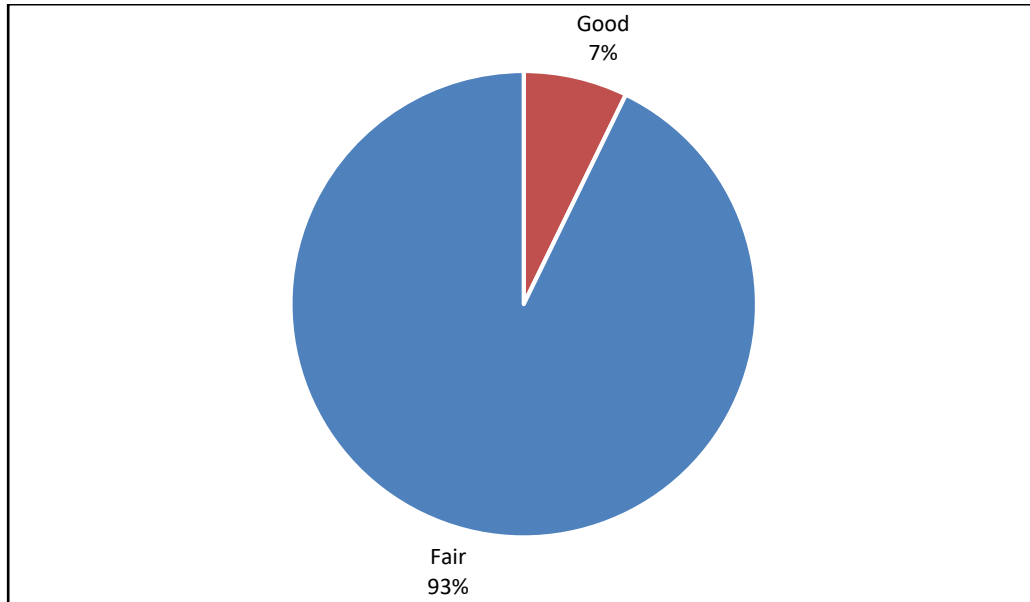
Moving forward, it is important that regular inspections be carried out to identify maintenance and repair needs so that use of the buildings is uninterrupted.

Current Levels of Service

Table A20 outlines the qualitative descriptions used to determine the community levels of service provided by the Township of Machar's buildings.

Table A20: Community Levels of Service – Buildings

Service Attribute	Performance
Quality	The Township maintains its buildings to a level that provides good user experiences.

Table A21 describes the technical levels of service which relate to the Township's buildings.

Table A21: Technical Levels of Service – Buildings

| Service Attribute	Performance Measure	Performance
Quality	The average condition rating of all buildings in the Municipality	Fair
	Number of inspections carried out annually	Not Currently Available

Lifecycle Management

The current lifecycle management strategy for buildings relies upon accounting useful life estimates, as well as condition assessments. Buildings are currently amortized in accounting records over 50 years. This is the estimated useful life used in this Plan. However, it should be noted that the life of buildings may be extended well beyond 50 years through preventative and normal maintenance, minor and major rehabilitation, and component replacement. The Township considers all these options when making decisions about building assets.

As age of components for each building are not known in entirety, the lifecycle strategy includes only replacement of the buildings at 50 years old. With the maintenance, repairs, and component replacement carried out by the Township, it is expected that buildings will last longer than the accounting useful life. The average annual lifecycle costs have been estimated and are shown in Table A22. Figure A8 shows the estimated annual capital funding needs for the next 10 years. It should be noted that this graph is based on replacement of each building every 50 years. In practice, it is more likely that costs will be smoother as building components are replaced when needed.

Table A22: Average Annual Lifecycle Costs – Buildings

Asset Class	Average Annual Lifecycle Cost
Buildings	$36,460

Figure A8: 10-Year Capital Forecast – Buildings
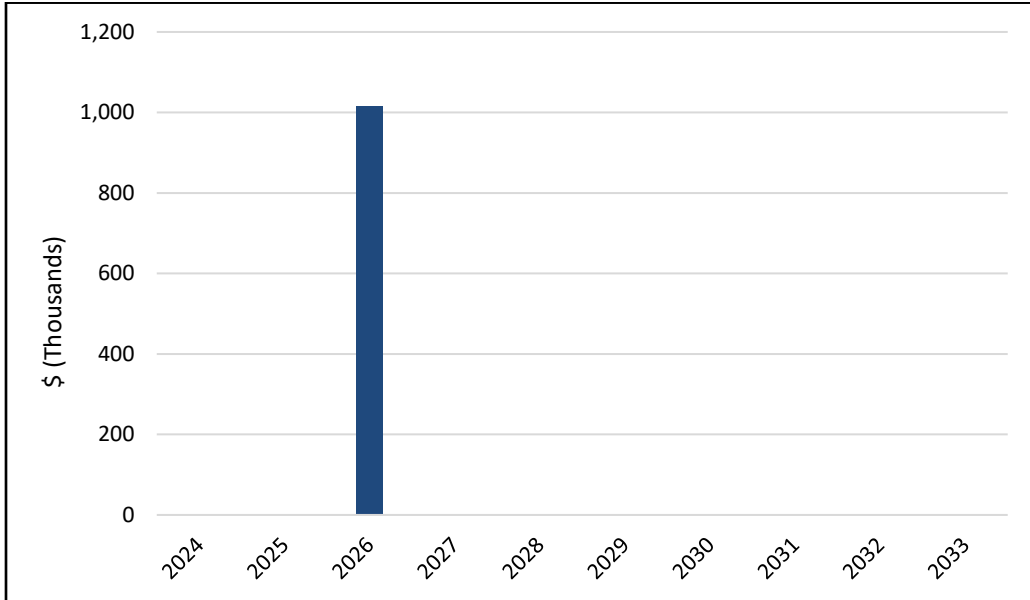
Vehicles

State of Local Infrastructure

The Township of Machar's vehicle fleet makes up a crucial component of its entire asset inventory. Five (5) vehicles, including two (2) pick up trucks and three (3) plow trucks, make up this category. These vehicles belonging to the Public Works Department are used in daily operations to carry out the monitoring, maintenance, and improvement of the Township road network. Activities such as patrolling, snowplowing, pothole repair, and gravelling roads are done with the use of these vehicles.

The pick-up trucks were purchased new in 2014 and 2018, while plow trucks were purchased new in 2008, 2013, and 2020. As of 2022, the average age of vehicles, weighted by replacement value, is 7.4 years.

The cost to replace the entire vehicle fleet, in 2022 dollars, is $867,358. A summary of the replacement values is found in Table A23 below.

Table A23: Vehicle CRVs

Vehicle	Number of Assets	Current Replacement Value
Pick-Up Truck	2	$115,321
Plow Truck	3	$752,037
Total	**5**	**$867,358**

Condition assessments for vehicle assets are age-based. Condition states are summarized in Table A24. The average condition rating (weighted average) for the assets in this class is fair. Condition ratings by current replacement value can be viewed in Figure A9.

Table A24: Useful Life Condition States

Useful Life %	Condition State	Description
0% - 9%	Excellent	Only normal maintenance required.
10% - 49%	Good	Normal and preventative maintenance required.
50% - 74%	Fair	Some signs of deterioration. Minor repairs expected.
75% - 100%	Poor	Significant signs of deterioration. Major rehabilitation or replacement expected soon.
>100%	Very Poor	Asset beyond useful life. Replacement is required.

Figure A9: Vehicle Condition Ratings
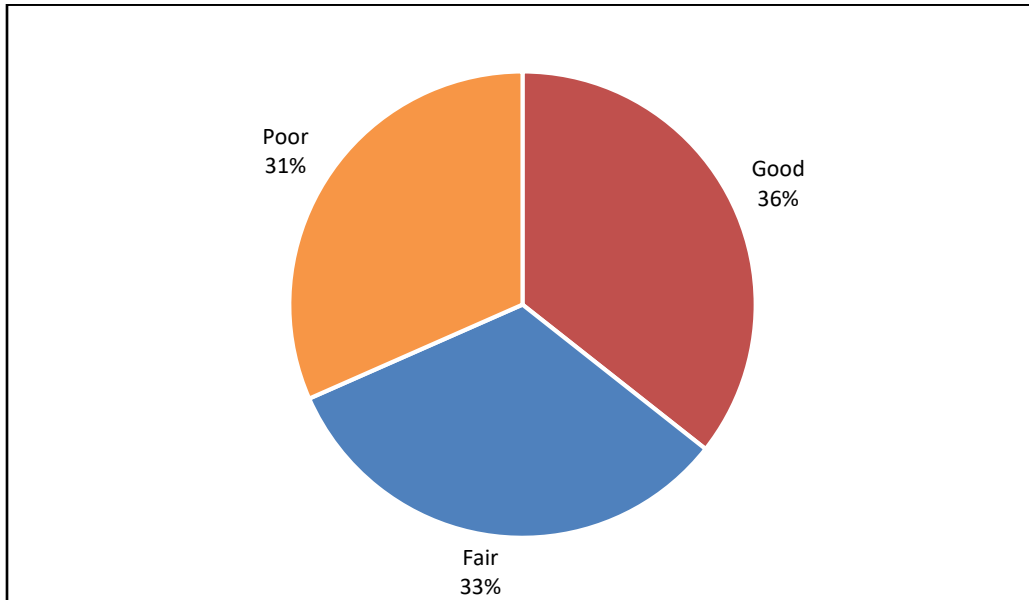
The Township carries out many preventative maintenance and normal maintenance activities on its vehicles. This allows for the use of vehicles beyond their expected useful life, which is not reflected in the condition ratings. It is hopeful for future updates that the Township will be able conduct condition assessments on their vehicles to produce a more accurate condition rating.

Current Levels of Service

Table A25 below outlines the qualitative descriptions used to determine the community levels of service provided by the Township of Machar's vehicles.

Table A25: Community Levels of Service - Vehicles

Service Attribute	Qualitative Descriptions
Reliability	The Township maintains their vehicles so they are reliable in performing the tasks required.

Table A26 describes the technical levels of service which relate to the Township's vehicles.

Table A26: Technical Levels of Service – Vehicles

| Service Attribute	Performance Measure	2022 Performance
Reliability	Average reliability of vehicles (rated by staff)	Not Currently Available
	Average condition rating	Fair
	Number of vehicle assets with a condition rating of poor or worse	2

Lifecycle Management

The lifecycle management strategy for vehicles relies heavily upon age-based estimates and accounting useful life figures. Staff and Council will identify the need to replace vehicle assets through a review of the age and condition of vehicles, as well as current maintenance and repair costs. The decision will be made while attempting to achieve the best value for the lowest cost to taxpayers.

The average annual lifecycle costs for vehicles have been estimated by dividing replacement cost by the estimated useful life. These costs are found in Table A27. Figure A10 shows the estimated annual capital funding needs for the next 10 years.

Table A27: Average Annual Lifecycle Costs – Vehicles

Asset Class	Average Annual Lifecycle Cost
Vehicles	$64,550

Figure A10: 10-Year Capital Forecast - Vehicles
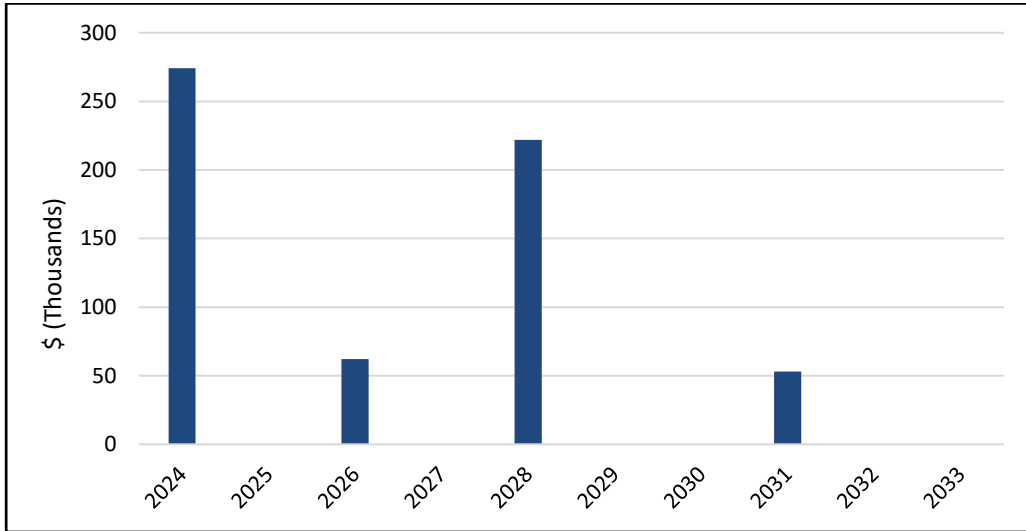
Machinery and Equipment

State of Local Infrastructure

The Township of Machar's fleet of machinery and equipment is composed of items from the Administration, Roads, and Landfill Departments. The machinery and equipment are used in daily operations to complete administrative duties, maintain roads, and operate the Landfill.

The average age of machinery and equipment assets, weighted by replacement value, is 14.5 years. The cost to replace the entire asset class is $951,652. A summary of the replacement values, categorized by department, is found in Table A28.

Table A28: Machinery & Equipment CRVs

Department	Number of Assets	Current Replacement Value
Administration	2	$66,690
Public Works - Roads	6	$583,732
Public Works - Landfill	2	$301,230
Total	10	$951,652

Condition assessments for machinery and equipment are age-based. Condition states are the same as presented for vehicles, summarized in Table A24. The average condition rating (weighted by replacement value) for the assets in this class is fair. Condition ratings distributed by replacement value can be viewed in Figure A11.

The Township carries out preventative and regular maintenance on its machinery and equipment, with the hopes of extending the life of the assets. With the maintenance activities performed, there is possibility that some of the condition ratings of the assets based on age are not truly reflective of the asset's condition. In the future, the Township hopes to conduct condition assessments of its assets on an individual basis, producing more accurate ratings and estimations of remaining useful life.

Figure A11: Machinery & Equipment Condition Ratings
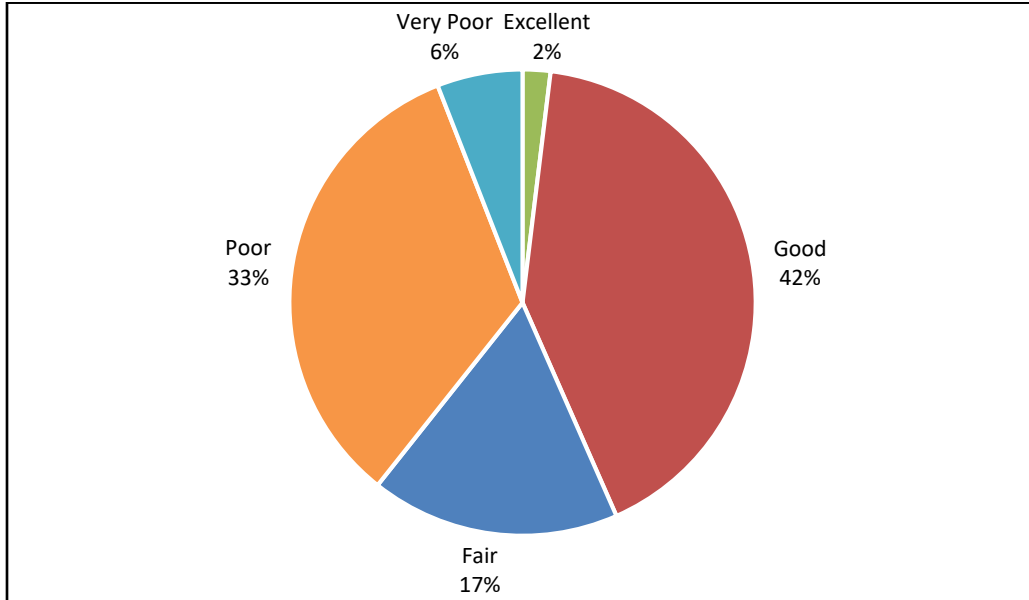
Current Levels of Service

Table A29 below outlines the qualitative descriptions used to determine the community levels of service provided by the Township of Machar's machinery and equipment.

Table A29: Community Levels of Service - Machinery & Equipment

Service Attribute	Qualitative Descriptions
Reliability	The Township maintains their machinery and equipment so they are reliable in performing the required tasks.

Table A30 describes the technical levels of service which relate to machinery and equipment.

Table A30: Technical Levels of Service - Machinery & Equipment

| Service Attribute	Performance Measure	2022 Performance
Reliability	Percentage of regularly scheduled maintenance performed	Not Currently Available
	Average condition rating	Fair
	Number of machinery and equipment assets with a condition rating of poor or worse	3

Lifecycle Management

As with vehicles, the machinery and equipment strategy formation has heavily relied upon age-based data and accounting useful life estimates. Township staff will identify machinery and equipment assets which have reached the end of their useful life based on the reliability and effectiveness of the asset along with a cost analysis. The decision for major rehabilitation or replacement will be made by Council, taking into consideration various factors such as cost, funds available, risk, and asset priority.

The average annual lifecycle costs for machinery and equipment have been estimated by dividing the replacement cost by estimated useful life. Table A31 displays the average annual lifecycle costs estimated to be $70,802. Figure A12 presents the estimated annual capital funding needs for the next 10 years.

Table A31: Average Annual Lifecycle Costs - Machinery & Equipment

Asset Class	Average Annual Lifecycle Cost
Machinery and Equipment	$70,802

Figure A12: 10-Year Capital Forecast - Machinery & Equipment
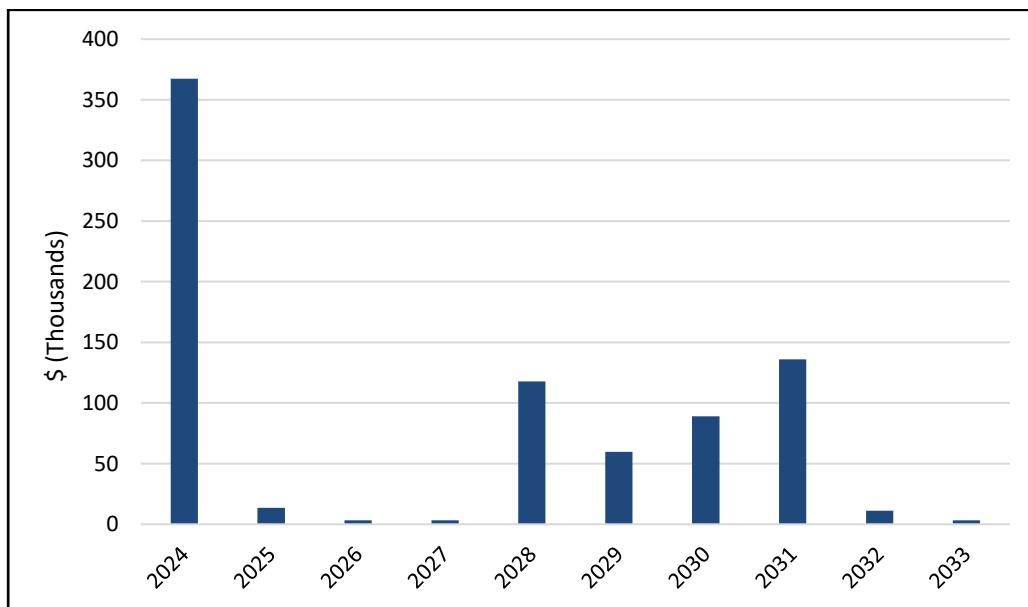
Land Improvements

State of Local Infrastructure

Land improvements include a variety of assets located at multiple spots within the Township. These assets aim to provide an improved level of service to residents and visitors. Land improvement assets include the office parking lot, speed signs, gates, fencing, lighting, water wells for testing, playground equipment, boat launch, and dock.

The average age of these assets (weighted by replacement value) is 7.8 years. The cost to replace the land improvement assets is $285,112. A further breakdown can be found in Table A32 below.

Table A32: Land Improvement CRVs

Department	Number of Assets	Current Replacement Value
Administration	1	$30,434
Public Works - Roads	1	$8,635
Public Works - Landfill	3	$77,851
Parks	4	$168,192
Total	9	$285,112

Condition assessments for land improvement assets are age-based. Condition states are the same as summarized under the *Vehicles* section in Table A24. The average condition rating (weighted) for the assets in this class is good. A breakdown of condition ratings can be viewed in Figure A13. It should be noted that condition based on age does not factor in some maintenance activities that have been performed to extend useful life. Condition assessments of each individual asset would provide the most precise rating. In the future, the Township hopes to conduct condition assessments on these assets to provide a more accurate rating.

Figure A13: Land Improvement Condition Ratings
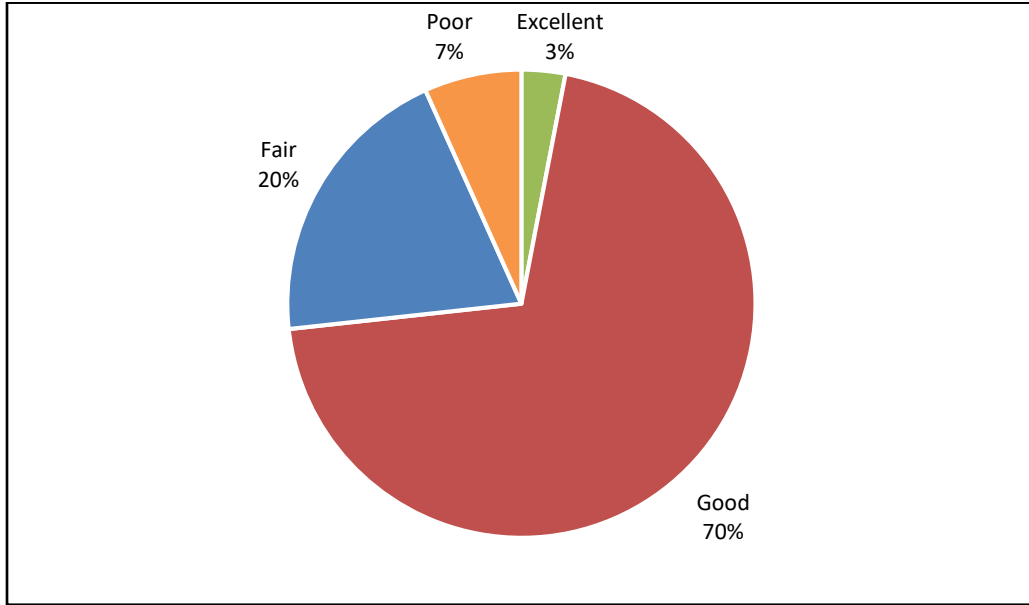
Current Levels of Service

Table A33 below outlines the qualitative descriptions used to determine the community levels of service provided by the Township of Machar's land improvements.

Table A33: Community Levels of Service - Land Improvements

Service Attribute	Qualitative Descriptions
Reliability	The Township aims to maintain land improvements so they perform as intended

Table A34 describes the technical levels of service which relate to the land improvements.

Table A34: Technical Levels of Service - Land Improvements

| Service Attribute	Performance Measure	2022 Performance
Reliability	Average condition rating of land improvement assets	Good
	Number of land improvement assets with a condition rating of poor or worse	1

Lifecycle Management

To remain consistent with condition ratings, the lifecycle management strategy for land improvements is also based on age. The useful life estimates are based on accounting useful life, and costs are inflated historical amounts. As assets are used and their life is diminished, Township staff will identify the need to replace the assets. Decisions on which assets will be replaced first will be based on the funds available, as well as risk and asset use. The average annual lifecycle costs have been estimated by dividing replacement cost by the estimated useful life. These costs are found in Table A35. Figure A14 shows the estimated annual capital funding needs for the next 10 years.

Table A35: Average Annual Lifecycle Costs - Land Improvements

Asset Class	Average Annual Lifecycle Cost
Land Improvements	$14,255

Figure A14: 10-Year Capital Forecast - Land Improvements
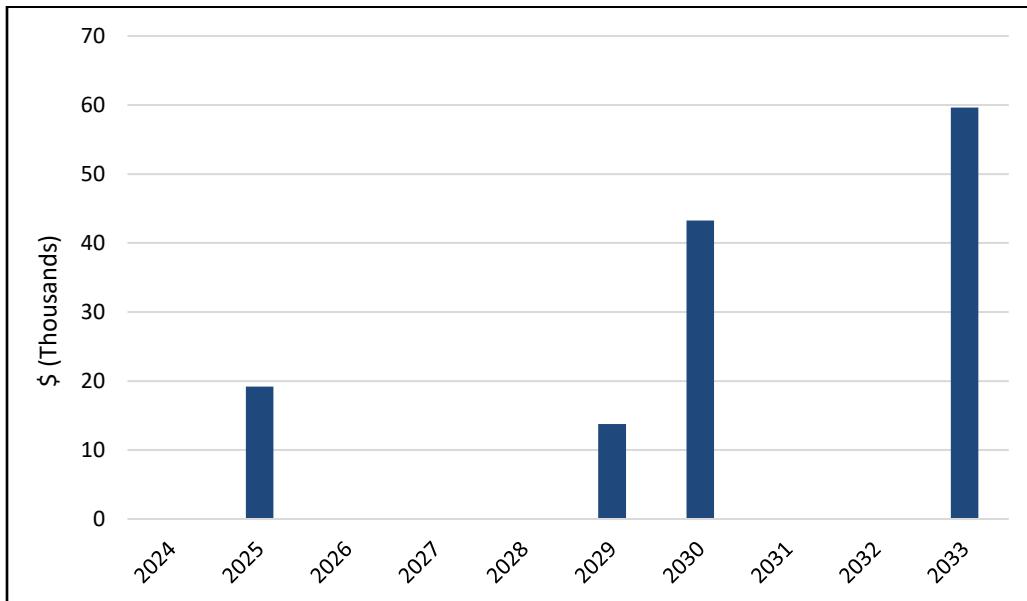
Population and Economic Growth

The 2021 Census recorded a population of 969, which is a 9.9% increase over the 2016 population count of 882. The annual growth rate is approximately 1.98% per year. The Township is expecting to see more growth and development as individuals continue to move further north as a result of seeking a quieter lifestyle or choosing to retire in the Municipality.

A continued increase in population may necessitate the expansion of the current inventory, and possibly the services provided. Another factor to be considered would be the need for increased human capital, or skilled employees, to deliver these services. Moving ahead it will be important to consider the effects of growth in relation to various plans, including the Asset Management Plan. The Township will need to consider which services are most crucial and how to fund those services while maintaining a specific level of service.