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Ontario First Nations  
Technical Services  
Corporation

# Moose Cree First Nation Asset Management Plan Summary

February 26, 2020

# Moose Cree

First Nation



# Moose Cree First Nation Asset Management Plan

## Summary

September 23, 2019

Revised: February 26, 2020

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Moose Cree First Nation

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In partnership with:

Ontario First Nations Technical Services  
Corporation

## INTRODUCTION AND CONTEXT

This report has been prepared with the support of the Ontario First Nations Technical Services Corporation (OFNTSC) and is part of a Pilot Project to advance the capacity and capabilities of Ontario First Nations in managing assets and services delivered to members. This report is the first Asset Management Plan (AMP) for the Moose Cree First Nation (MCFN) of Moose Factory (ON) and establishes a framework that supports an informed decision-making process that is used to improve the management of the community’s infrastructure.

In this context, the AMP provides a life-cycle investment profile that establishes a cost for managing the infrastructure to sustain delivery of the services that depend on this infrastructure. This cost profile can be used to compare to the current level of funding provided by Indigenous Services Canada (ISC) for this community.

This Pilot Project has developed tools and templates to capture information efficiently and effectively about the assets and services currently provided, as well as to provide a window into the future to better understand the long-term costs of service delivery.

### What is Asset Management?

Asset management planning is a comprehensive process to ensure that the delivery of services from infrastructure is provided in a financially sustainable way. This AMP can be considered a first step in the journey towards a fully comprehensive asset management system. Asset management plans are intended to be living documents that evolve continually and inform operating and capital decisions and to aid in long term financial planning.

The term asset management, as used in this report, is defined as “**the application of sound technical, social and economic principles that considers present and future needs of users, and the service from the asset**”.

Asset management is more than a report – it is an organizational culture of continuous improvement to know the condition, value and remaining life of the community assets, to assess the risks to the services provided to the community, to identify the needs (human, material and financial resources) to maintain and improve the quality of services provided by the assets, and to plan for the future.

### Context

An AMP is one of the key documents in a hierarchy of documents that guide the processes for managing infrastructure systems in the community, as illustrated below.



1. **Community Plan** – this is the highest-level document for a community. It is a documentation of the vision for the future of the community developed with significant public consultation. The Community Plan typically includes statements associated with sustainability principles, inferring the need to utilize Asset Management practices in efforts to optimize service delivery over the life of the assets. Responsibility for a community plan rests with Council and the public.



## MOOSE CREE FIRST NATION ASSET MANAGEMENT PLAN - SUMMARY

2. **Asset Management Policy** – this is a document to support the Community Plan and affirms a formal Council commitment to implementing AM processes. It provides Council's direction to senior staff (CAO, etc.) including implementation objectives. Responsibility for the policy is with the Council. (An AM Policy guide and template was developed through this project for adoption by individual First Nations)
3. **Asset Management Strategy** – a senior staff's commitment for implementing the AM Policy. It is a set of directions, community specific, for improving and sustaining AM practices in the community and the organization to ensure consistent application of AM in all departments involved with the management of assets in a community. Responsibility for the Strategy rests with the CAO and senior management team in a community.
4. **Asset Management Road Map** – an operational department's commitment to implement the corporate AM Strategies. It will be a set of actions/activities for implementing AM within the operational departments in the framework of a corporately integrated plan. The responsibility of the road map rests with the operational department managers and staff.
5. **Asset Management Plan (AMP)** – the consolidation of asset data into a register that is used to establish capital, operations and maintenance needs. The AM Plan includes a life-cycle and risk analysis; needs are used to determine financial requirements to meet the desired levels of service.

### Plan Organization

This AMP has been compiled using the best available information, although some data and cost information could not be obtained. It includes information on the Moose Cree First Nation's Buildings, Public Works assets, Roads, Housing and Fleet assets. The report should be at a minimum annually to confirm and enhance the contents of this report, and further refine the information available to support sustainable decision making.

The information contained within this AMP is:

- a) An Asset Register / State of the Infrastructure – summary of existing assets in a spreadsheet format including:
- b) an Asset Management inventory of assets, including age and life expectancies
- c) a valuation based on the capital replacement cost of all funded assets
- d) a condition rating of all funded assets
- e) A Needs Assessment – Renewal/replacement and operations & maintenance (O&M) needs in the form of a life-cycle investment profile of the assets
- f) Investment Priorities - summary of the investment needs based on life-cycle analysis
- g) A Financial Plan - a summary of capital, operations and maintenance funding to demonstrate future budget request submissions to funding agencies
- h) Documentation – a summary addressing funding, levels of service, risk-based priorities and community resources.



### Disclaimer

The information in this report with high confidence is:

- **Needs Assessment and Financial Plan**

Based on the information gathered for this report, the life-cycle investment profile for the assets of the Moose Cree First Nation provide a solid base for continued growth of the communities AMP.

The information in this report which requires further investigation and refinement is:

- **Asset Register / State of Infrastructure**

Assets and costs should be investigated, verified and edited to meet the Moose Cree First Nation's needs. An analytical comparison between real O&M spending and the estimated O&M costing (provided in this document), should be completed to create a cohesive and more realistic vision of the community's portfolio.

- **Levels of service**

Levels of service should be developed and utilized to ensure they meet with future demands and budgeting requirements. These are both essential to the development of a sound and reliable ongoing asset management plan.

## THE COMMUNITY

Moose Cree Lake First Nation (MCFN) is a located-on Moose Factory Island near the mouth of the Moose River, at the southern end of James Bay. The island has an area of approximately 5.25 km<sup>2</sup>. The population on the reserve is approximately 1,600. The community is associated with the entire island, but politically, the island is divided into two entities:

Factory Island 1:

- Indigenous reserve that makes up the northern two-thirds of the island, belonging to the Moose Cree First Nation (MCFN) (Population: 1,451)

Unorganized Cochrane District:

- Unincorporated southern third, home to the old Hudson's Bay Company post and government services, governed by the Provincial Local Services Board and the federal Weeneebayko Health Ahtuskaywin that administers the hospital (Population: 1,007)

MCFN lies in the Hudson Bay Lowlands physiographic region, which is flat and underlain by sedimentary rocks, mainly limestone, dolomite, and shale. The extreme flatness of the terrain, the moisture holding quality of marine clay, and the presence of permafrost has resulted in poor drainage; thus, the lowlands are waterlogged. The high banks of the Moose River present better drainage and the shelter provided by the banks permits the growth of trees such as black spruce and balsam poplar.

Being situated so close to James Bay, the island of Moose Factory is affected by the Arctic Ocean tides which rise and fall twice daily, varying as much as 2.5 meters from high to low tide.





**MOOSE CREE FIRST NATION ASSET MANAGEMENT PLAN - SUMMARY**



Photos: Water Treatment Plant, Government Offices, Residential House, *Site Photos*

**ASSET PORTFOLIO**

The First Nation manages and maintains a wide range of infrastructure, facilities and buildings to provide essential services to the community; these assets include:

• <b>Moose Cree First Nation Assets</b>		
Main and Side Roads	Arena	Small stores
Administrative Buildings	Elder's Cultural Centre	Water, drainage and sewer systems
Community Buildings	Teacherages	Fire Station
Schools and EPRs	Fire Tanker	

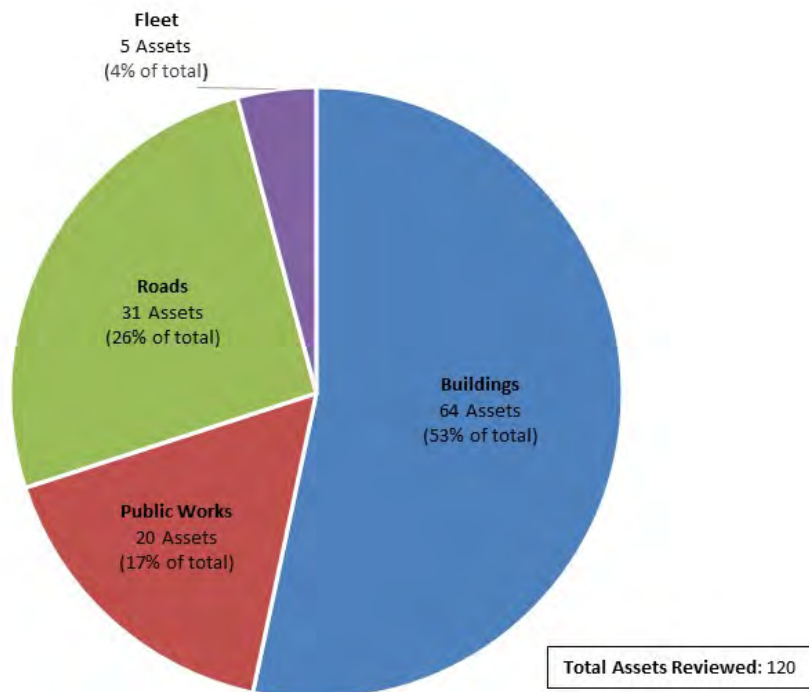
A compiled list of assets was created using the ACRS reports, funded and non-funded asset reports and other asset lists provided by the MCFN. Assets with ACRS reports were proven to have the most recent and detailed information including photographs, quantities and condition ratings. This detailed information was available for 79 of the assets; for the remaining assets, information available varies. Verifying the ACRS data and conducting condition assessments of assets not included in ACRS need to be completed to refine the analytical results for future iterations of the AM plan.

Based on the information available, the Moose Cree First Nation owns and operates a total of 120 assets, distributed in four broad asset categories:

- Buildings (26,235 sqm),
- Public Works (including water treatment and distribution, wastewater treatment, street lighting),
- Roads (15 km), and
- Fleet (5 vehicles and attachments)



### Moose Cree First Nation Assets by Category



## INVESTMENT NEEDS

### Approach

A whole-of-life (Full Life-Cycle) approach is used in this AMP. This approach is used to forecast the end-of-service life of the community assets and project when they will require funding for renewal or replacement while considering day to day operations and maintenance. It is understood that each asset has a limited lifespan and in the case of significant scale assets, they are made up of components that also have a limited lifespan.

By considering the entire asset as a sum of its components, the whole-of-life renewal profile can be viewed as a series of recurring reinvestments; these reinvestments, which are required throughout the life-cycle of the asset, represent the renewal costs.

It should be noted that while this approach provides a transparent view of the long-term costs of owning and maintaining an asset, it is a long-term forecast and an estimate of future costs. As an asset is actively managed through its life, decisions need to be made based on the age, performance and functionality of the asset.

Functional requirements change over decades of operations (e.g. building uses, building codes, environmental regulations), and what may have been suitable and desirable when constructed may not remain constant over the life of the asset.



## MOOSE CREE FIRST NATION ASSET MANAGEMENT PLAN - SUMMARY

These types of decisions are an important factor in planning for a significant renewal, replacement or upgrade of an asset as well as determining the ideal operations and maintenance budget to achieve optimum asset performance and longevity.



Photos: Community Hall, Chief Munro Linklater Memorial Education Center, Public Garage, *Site Photos*

The cost estimating method used in this report is based on the approach outlined in the AANDC Draft Cost Reference Manual (CRM) Update (RV Anderson Associates Ltd., 2012), escalated to 2018 dollars (Stats Canada inflationary rates). The CRM update uses a system of costs in a top-down approach to identify per unit costs based on the asset type and historical costing values in First Nations communities.

### Capital Replacement Cost

Based on the work done for this asset management plan, and with the information available, the entire asset portfolio of the Moose Cree First Nation has an estimated total Capital Replacement Cost (2018 dollars) of \$130,425,777. Using the life-cycle assessment methodology described in detail in the AM Plan, the Average Annualized 20-year life-cycle capital investment requirement for renewal and replacement is \$4,539,503 per year. The total annual operation and maintenance (O&M) costs for these assets is estimated at \$5,879,048 per year. The Table below provides a representation of the average annual costs to maintain the First Nation's assets.

### Total Replacement and Annual Operations and Maintenance(O&M) Costs

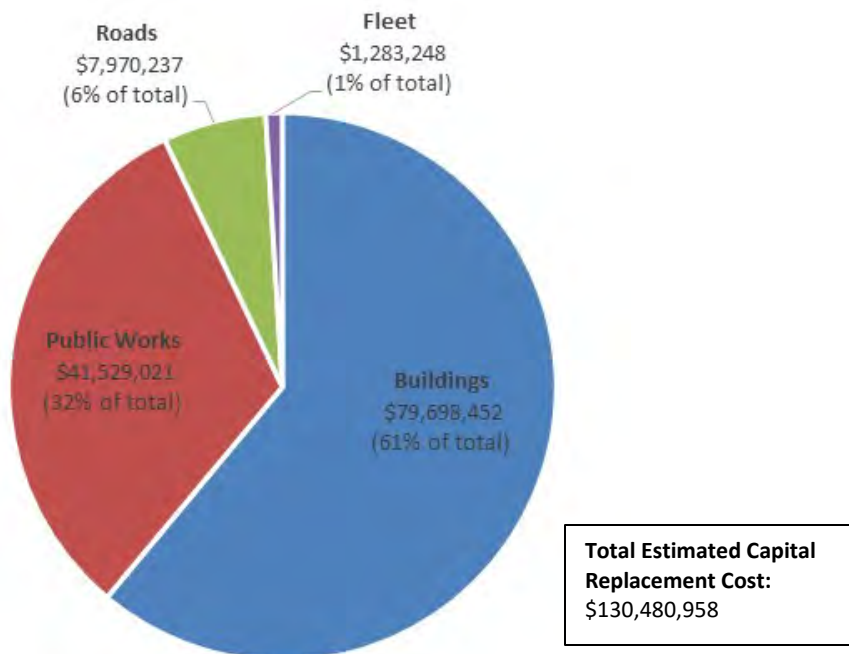
	Estimated Cost
<b>Capital Replacement - All Assets</b>	\$ 130,480,958 total
<b>Average Annual Costs (20-year Life-cycle)</b>	
Renewal/ Replacement	\$ 4,539,503 / year
Operations and Maintenance	\$ 5,879,048 / year
<b>Total</b>	<b>\$ 10,418,551 / year</b>

Buildings make up the most significant value of the asset portfolio as shown in the Figure below. Due to various gaps in information for all assets, an estimated capital replacement cost could not be established for some. The estimated total capital replacement costs are therefore directly impacted by this missing information, and therefore should be considered a lower limit of the total estimated Capital Replacement Cost of all assets of the MCFN.





### Estimated Capital Replacement Cost by Category



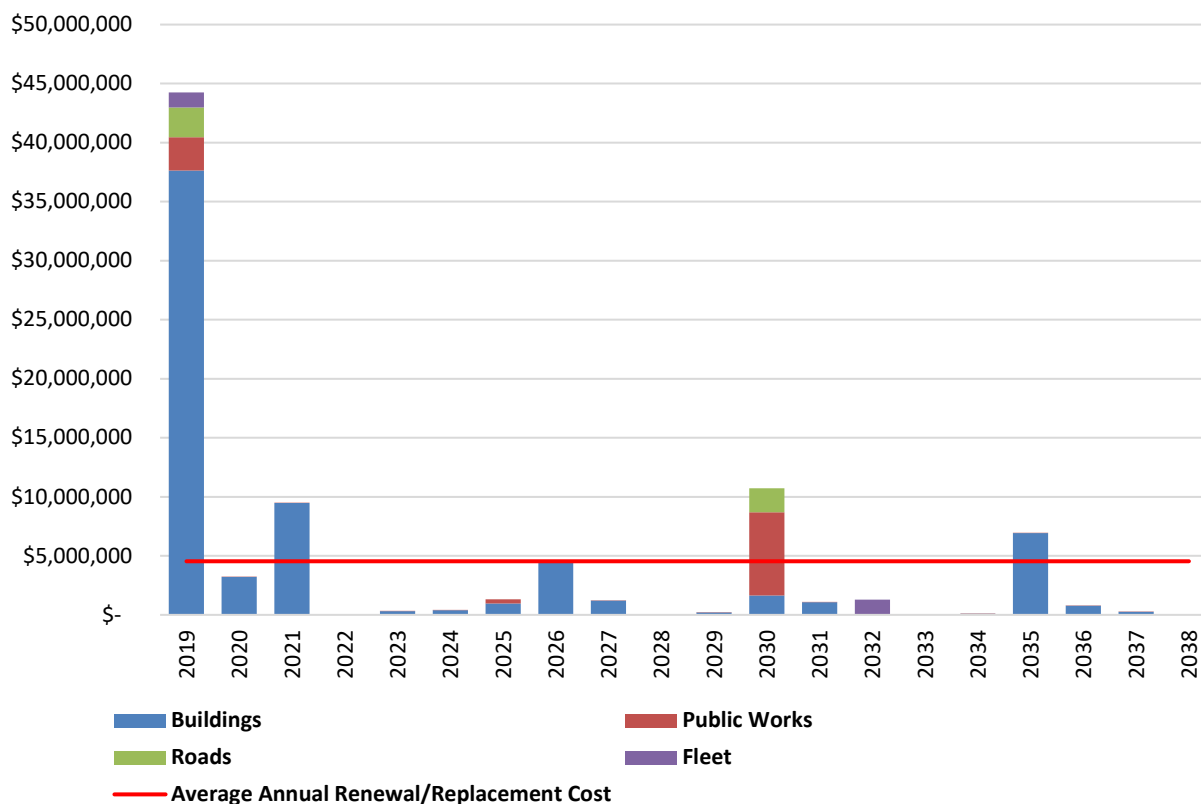
### Renewals and Replacements

Renewals and replacements are activities that do not upgrade the original level of service but seek to return the asset to a functional level that meets the original level of service for which the asset was intended. For the purposes of asset management, the componentized replacement of systems to original functional levels as well as complete capital replacements of assets would be considered “renewals.”

In the preliminary stages of an asset management plan, several assets identified as already having exceeded their useful life will appear as requiring renewal in the first year. While these assets and components should be reviewed for required replacement, it is not generally feasible or necessary to replace all assets in the next capital year. Prioritization will be required and can be done by considering the risks that a failure of these assets or critical components would pose to the Community (e.g., health, safety, environmental).



**Asset Renewal/Replacement Forecast by Category, 2019 - 2038.**



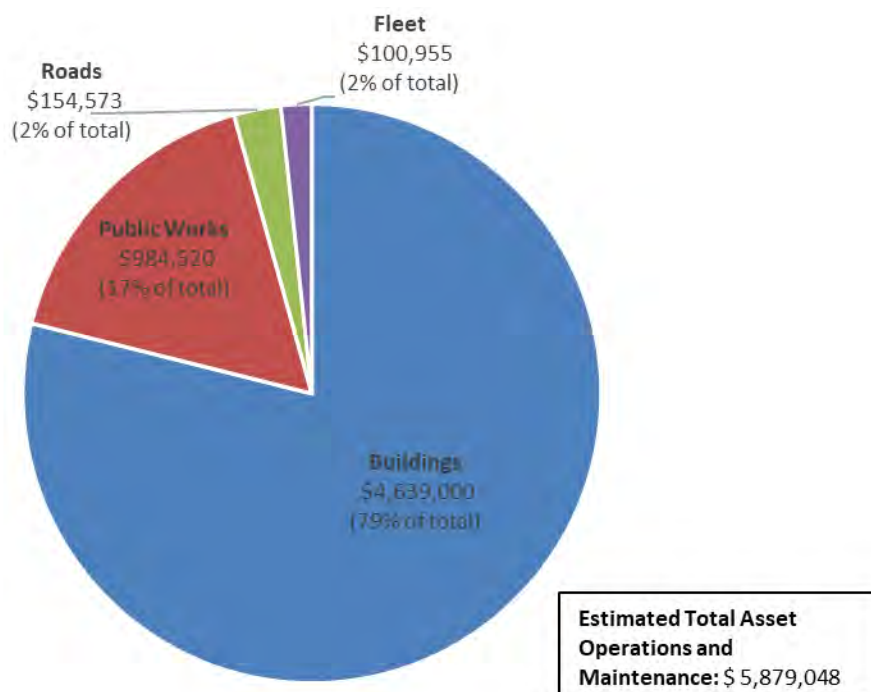
## Operations and Maintenance

Buildings make up the most significant value of the O&M Investment Needs as shown in the Figure below; due to various gaps in information for all assets, an O&M investment need could not be established for some. The total annual O&M investment needs shown in the previous table and in the Figure are directly impacted by this missing information, and therefore should be considered a lower limit of the Annual O&M investment needs of the MCFN.

Initially, O&M costs for the assets were to be provided by the KLFN and used to produce the required investment needs based on historical data. However, due to several factors including the lack of specific O&M records for individual assets, and the timeline of the AMP development, the 2012 Draft RVA Cost Reference Manual data, actualized to 2018 cost, was used in the O&M investment needs calculations. These costs consider a Geographic Multiplier (City Centre distance as per ICMS – in the case of KLFN the closest being Winnipeg) of 0.99 and a Remoteness Factor (Zone 4) of 2.0.



### Estimated Operations and Maintenance Investment Needs by Category



### Current Indigenous Services Canada (ISC) Net funding

Information available for 2018-19 ISC O&M funding for funded assets indicated a total O&M Net funding amount of \$1,599,585 for the Moose Cree First Nation. Information from the First Nation further indicated that from the total amount received for O&M, 92% (\$ 1,482,283) was allocated to specific asset O&M costs, and the remaining to other community O&M needs (e.g., Flood Emergency Preparedness, Fire Training)

Comparing the assets directly funded by ISC and the estimated O&M costs for these assets, a shortfall of \$3,913,858 can be identified, equivalent to 72.5% of the estimated total annual O&M needs for these assets, as seen in the table below.

ISC 2018-2019 O&M Funded Assets		
Total Estimated O&M Costs (ISC funded assets)	\$ 5,396,141	100%
ISC 2018-2019 O&M Net Funding	\$ 1,482,283	27.5%
Total Estimated O&M Funding Gap	\$ 3,913,858	72.5%



### Observations

The following key observations that can be drawn from this initial body of work:

1. Financial
  - The First Nations current financial systems do not track all O&M costs for individual assets, thus requiring estimates based on best available data.
  - Based on the information obtained to date, only 27.5% of MCFN's estimated O&M costs for ISC funded assets are being funded by ISC, leaving a shortfall of an estimated \$3,913,858 to operate and maintain these assets in a state of good repair and functionality.
2. Buildings
  - The asset category with the greatest total capital replacement cost is buildings, which makes up 61% (\$79.7 million) of the total capital replacement cost of all assets reported in this AMP. Buildings also consume 79% (approximately \$4.6 million) of the estimated O&M investments.
3. Public Works
  - Some Public Works capital replacement costs and O&M costs could not be accurately calculated due to differing quantity units (e.g., for water assets, "each" vs "L/s"). Due to these discrepancies, the O&M and capital replacement costs reported for these assets are considered low. These assets should be further reviewed, and their information updated to provide a more accurate assessment of these costs.
4. Roads
  - Although roads make up for 26% of all assets in the MCFN community, they only contain 6% (\$7,970,237) of the total capital replacement costs and 2% (\$154,573) of the total O&M costs reported in this AMP.

### RECOMMENDATIONS

An asset management plan is meant to be a living document that evolves year to year based on community requirements (changing levels of service), capital decisions and long-term financial planning. It is recognized that it may take several planning cycles for Moose Cree to achieve a sufficient level of detail for a fully developed and sustainable asset management plan. The following are some of the key recommendations and suggested tactics to improve to the current AMP.

#### Asset information

- Manage and maintain an accurate asset inventory and update asset information.
- Establish processes to collect, clarify and validate asset costing and information.
- Monitor, report and review unit, and O&M costs for new and existing assets. Current and past O&M costs can be used to produce a more accurate O&M costs for each asset and validate/update CRM costing.

#### Life-cycle Management

- Assets typically require most of the renewal/replacement & O&M funding in the last 1/3 of their service life. Optimal life-cycle costs should be carefully evaluated to ensure that the asset is not extended too far outside its useful life.
- Assets that extend outside their useful life should have appropriate maintenance and renewals occur so the asset can meet expectations for longevity.



## MOOSE CREE FIRST NATION ASSET MANAGEMENT PLAN - SUMMARY

- Record installation and replacement dates to measure if the full useful life is being achieved by these components and systems.

### Costs and Funding

- Confirm and incorporate all budgets including Operations, Maintenance, Renewals and Upgrades into the asset management plan
- Plan, manage and maintain funding for maintenance items and renewals over the life-cycle of the assets
- Plan and manage funding for new infrastructure and required asset renewals over the life-cycle of the assets.
- Identify and implement changes to accounting financial systems arising from this AM Plan to include information on costs of operations, maintenance, renewals, and upgrades as defined in the plan.
- Establish links with PSAB 3150 Register for conformity and consistency

### Levels of Service

- Review, edit and implement levels of service on a regular basis to ensure they align with Council, organizational, community and stakeholder goals and expectations.

### Risk Management

- Create risk register including processes that identify, analyze and mitigate critical asset risks
- Determine/assign a ranking criterion to risk and identify priorities.
- Monitoring and reviewing the risk register on a regular basis, identifying any new risks, and changing data as required.
- Implement OFNTSC's FN PIEVC Protocol to identify risks to assets related to climate change.
- Identify all the critical assets or critical system components.
- Once critical assets have been defined, establish a maintenance program to ensure service interruptions do not occur for critical services.

### Monitoring Recommendations

- The current asset management plan should be reviewed during all annual capital and operational planning processes to inform service providers on resources and potential impacts on levels of service as a result of budgetary decisions and priority settings. This will help the Community balance the actual levels of service with available funding dollars and better prioritize financial decisions.
- All future infrastructure decisions should be integrated into the short, medium- and long-term community objectives.
- For the community to gauge the effective use of the asset management planning strategy a variety of different performance measures can be followed. These performance measures should be chosen to suit the community and it's needs.
- Review risk matrix against levels of service and use as a basis for prioritization for O&M, renewal and replacement costs.





## **NEXT STEPS**

Recommendations for Next Steps to further advance the First Nation's Asset Management capabilities are:

1. The asset condition rating and actual useful life of the assets included in this AMP should be reviewed and, as required, revised or new information produced if data is not available – this may require the First Nation's staff to inspect those assets.
2. The capital and O&M investment needs should be reviewed and compared to funding and budgets; this will allow MCFN to establish how sustainable current practices are to maintain services to the community.
3. Identify risks to the assets – include those related to climate change and assess impacts on the critical assets and services.
4. Define, through community consultations, levels of service for the different asset classes.
5. Adopt an Asset Management Policy to guide all AM efforts in the community.

